Grant: 1F32AG022727-01

Program Director: ELIAS, JEFFREY W.

Principal Investigator: NIELSEN, LISBETH PHD

Title: Emotion experience and decision behavior in normal aging

Institution: STANFORD UNIVERSITY STANFORD, CA

Project Period: 2003/09/01-2006/08/31

DESCRIPTION (provided by candidate): Specifying how emotional factors influence motivation, choice, and decisions across the lifespan is a critical goal for understanding the aging mind. While emotion has traditionally been considered disruptive to rational choice, recent studies demonstrating the tight interplay of emotion and reason in both economic and social decisions suggest a more differentiated picture. Emotions provide information to the decision-maker regarding the relevance of choice options, the attractiveness of strategies, and the desirability of outcomes. Age-related changes may complicate this picture. Despite predictable cognitive declines, emotional functions are remarkably preserved in normal aging. Moreover, changes in emotional and social goals at the end of life may interact with decision behaviors in as yet unknown ways. A major question addressed by this research is whether there are age-related differences in emotional influences on decision-making and whether biological or motivational changes lie at their core. Four studies are proposed to examine the experiential, behavioral, physiological, and neural correlates of emotion elicited by decisions involving monetary incentives pursued in social contexts. Experiments 1 and 2 examine the influence of aging and time perspective on emotion experience, motivated behavior, and peripheral physiology in a monetary incentive task within a social exchange context. Experiment 3 examines age-related differences in the activity of neural systems involved in emotion experiences related to the anticipation and receipt of rewards and losses. Experiment 4 focuses on the influence of time perspective manipulations on activity in these neural systems.

Grant:	3P01AG017211-04S1
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	CZAJA, SARA J PHD
Title:	CENTER ON RESEARCH AND EDUCATION--AGING AND TECHNOLOGY
Institution:	UNIVERSITY OF MIAMI-MEDICAL Coral Gables, FL
Project Period:	1999/08/01-2004/07/31

A pressing need for the upcoming decades is ensuring that the large population of Older Americans are able to function independently and maintain an acceptable quality of life. Given the increased use of computers and other forms of technology in most settings, one important area of concern is how well older people will be able to adapt to rapid developments in technology. In order to function independently, people of all ages must learn how to assimilate technology into their lives. This represents a challenge for many older people. Available data indicates that older people typically have more difficulty learning and operating technical systems than younger people. Unless we understand how age affects the use of technology, successful use of technical systems will continued to be a challenge for current and future generation of older adults. Given that technology is not static, people must continually confront the need to learn to use new systems. The objective of the proposed multi-component program is to develop a center for Research and Education on Aging and Technology Enhancement (CREATE). The focus of the Center will be on conducting research aimed at understanding how age-related changes in function on an older's ability to interact successfully with technical systems. An additional goal of the Center is to ensure that these outcomes are disseminated to designers of technical systems and implemented in a wide variety of settings. Given that the emphasis in technologically-based tasks is on cognitive demands, all of the proposed research projects will investigate how age-related changes in cognitive abilities impact on task performance. Thus the Center will also generate data on large, representative samples of older adults which can be used by the research and design communities and further our understanding of issue relevant to aging and cognition. The Center will consist of a consortium of three universities: the University of Miami, Florida State University, and Georgia Institute of Technology. The research program of the Center will involve research projects that focus on different but complementary aspects of human-technology interaction (input device, design, training and interface design). The projects will investigate these issues over a broad range of tasks. The theoretical approach for the research projects is based on a combination of human factors engineering and cognitive psychology perspectives. The outcomes of each of the projects will include design guidelines for a broad range of technologies as well as information regarding aging and cognition. In addition, the projects will generate an extensive database on a large battery of component abilities. The Center will include a student research program to stimulate interest in aging, human factors, and cognition among future scientists. The Center will also include a management core and data management/statistical core. The cores will provide technical and administrative support, and scientific oversight to the research projects. The proposed Center is unique in terms of its emphasis on factors, aging, technology, a multi-disciplinary research team, a comprehensive approach to issues regarding aging and technology, and study populations which include diverse samples of older adults.

Grant:	5P01AG017211-05
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	CZAJA, SARA J PHD
Title:	CENTER ON RESEARCH AND EDUCATION--AGING AND TECHNOLOGY
Institution:	UNIVERSITY OF MIAMI-MEDICAL Coral Gables, FL
Project Period:	1999/08/01-2004/07/31

A pressing need for the upcoming decades is ensuring that the large population of Older Americans are able to function independently and maintain an acceptable quality of life. Given the increased use of computers and other forms of technology in most settings, one important area of concern is how well older people will be able to adapt to rapid developments in technology. In order to function independently, people of all ages must learn how to assimilate technology into their lives. This represents a challenge for many older people. Available data indicates that older people typically have more difficulty learning and operating technical systems than younger people. Unless we understand how age affects the use of technology, successful use of technical systems will continued to be a challenge for current and future generation of older adults. Given that technology is not static, people must continually confront the need to learn to use new systems. The objective of the proposed multi-component program is to develop a center for Research and Education on Aging and Technology Enhancement (CREATE). The focus of the Center will be on conducting research aimed at understanding how age-related changes in function on an older's ability to interact successfully with technical systems. An additional goal of the Center is to ensure that these outcomes are disseminated to designers of technical systems and implemented in a wide variety of settings. Given that the emphasis in technologically-based tasks is on cognitive demands, all of the proposed research projects will investigate how age-related changes in cognitive abilities impact on task performance. Thus the Center will also generate data on large, representative samples of older adults which can be used by the research and design communities and further our understanding of issue relevant to aging and cognition. The Center will consist of a consortium of three universities: the University of Miami, Florida State University, and Georgia Institute of Technology. The research program of the Center will involve research projects that focus on different but complementary aspects of human-technology interaction (input device, design, training and interface design). The projects will investigate these issues over a broad range of tasks. The theoretical approach for the research projects is based on a combination of human factors engineering and cognitive psychology perspectives. The outcomes of each of the projects will include design guidelines for a broad range of technologies as well as information regarding aging and cognition. In addition, the projects will generate an extensive database on a large battery of component abilities. The Center will include a student research program to stimulate interest in aging, human factors, and cognition among future scientists. The Center will also include a management core and data management/statistical core. The cores will provide technical and administrative support, and scientific oversight to the research projects. The proposed Center is unique in terms of its emphasis on factors, aging, technology, a multi-disciplinary research team, a comprehensive approach to issues regarding aging and technology, and study populations which include diverse samples of older adults.

Grant:	1P30AG022838-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	BALL, KARLENE K	PHD
Title:	Center for Translational Research on Aging and Mobility	
Institution:	UNIVERSITY OF ALABAMA AT BIRMINGHAM	BIRMINGHAM, AL
Project Period:	2003/09/30-2008/08/31	

DESCRIPTION (provided by applicant): This application proposes the renewal of an NIA Edward R. Roybal Center at the University of Alabama at Birmingham. The theme of the proposed Center is "Translational Research on Aging and Mobility." Mobility restrictions become more prevalent with advancing age, and have been attributed to impairments in physical, cognitive, and visual function. In addition to mobility restrictions, adverse outcomes such as falls, crash involvement while driving, and injuries are also associated with the underlying impairments. The significance of this area of research is underscored by the fact that continued mobility fosters independence and the ultimate goal of the Roybal Centers is to benefit the lives of older people by improving quality of life, enhancing productivity, and minimizing the need for care. Furthermore, decreased mobility leads to both social and economic dependence on family members and society at large. The Center continuation application proposes three cores, each designed to enhance the research infrastructure necessary to accomplish the objectives of the Center, and to support and promote translational research in the many affiliated Center research projects. The proposed Center will consist of a management core, which will provide data management and biostatistical services, technical support, access to State accident reports and a crash database, access to a recruitment database, access to assessment tools for use in Center research, access to a driving simulator facility, and a driving assessment clinic. A pilot grant core will be used to foster the development of new ideas and interventions of benefit to the elderly, and which will help researchers pursue additional funding to further develop, test and implement the ideas piloted in the Center. Finally, an information dissemination core will be provided to facilitate collaborations among academic researchers and commercial interests, and to insure that new findings of the Center are communicated to the scientific community, health care professionals, government policy makers, and the public at large. These activities will all be facilitated by our Advisory Board, which will oversee the functioning of the cores as well as the affiliated projects.

Grant:	1P30AG023101-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	PARK, DENISE C	PHD
Title:	Center for Healthy Minds	
Institution:	UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN	CHAMPAIGN, IL
Project Period:	2003/09/30-2008/08/31	

DESCRIPTION (provided by applicant): There is a unique confluence of researchers at the University of Illinois at Urbana-Champaign (UIUC) who are well-positioned to seek answers to the question of what conditions and interventions maintain or increase cognitive health with age. We propose to develop an Edward R. Roybal Center for Healthy Minds at UIUC that will have four primary goals. The first will be to organize a group of junior and senior investigators who will focus research efforts on this topic, studying social, cognitive, and physical (exercise) interventions, as well as combinations of these variables. A second goal will be to have a highly visible national Center on this topic and to make research on the topic of healthy minds a central focus at UIUC. A third goal will be to facilitate research on the topic, not only within UIUC, but to stimulate international networks of researchers to address this topic and share data through Center programs. A final goal will be to develop an ongoing set of recommendations of everyday behaviors that middle-aged and senior Americans may engage in to promote or maintain cognitive health and to disseminate these recommendations widely. Center researchers will focus efforts on six related hypotheses. There is existing expertise and some research on all of these hypotheses at UIUC. The hypotheses are: (1) Physical activity improves cognitive function; (2) Cognitive engagement and training supports a healthy mind; (3) Social engagement plays an important role in cognitive health; (4) Combinations of social/cognitive engagement may be particularly powerful in sustaining cognitive health in later adulthood; (5) Cultural context and stereotypes impact on cognitive health; and (6) Environmental supports promote and support healthy cognitive function in late adulthood.

Grant: 5R01AG016648-05

Program Director: ELIAS, JEFFREY W.

Principal Investigator: ACKERMAN, PHILLIP L PHD

Title: Knowledge Structures and Adult Intellectual Development

Institution: GEORGIA INSTITUTE OF TECHNOLOGY ATLANTA, GA

Project Period: 1998/07/15-2007/02/28

DESCRIPTION (provided by applicant): The long-term objective of the proposed research is to better understand the nature of intellectual development across the adult life span. Rather than concentrating only on process (e.g., working memory, abstract reasoning) or on common cultural knowledge (e.g., vocabulary), this project concerns knowledge structures, that is, what adults know, even though such knowledge may not be universal, or common to a dominant culture. Specifically, this project focuses on delineating the knowledge structures of adults, and demonstrating the relationships between knowledge structures and other critical individual-differences traits, within an integrated framework for adult intellectual development, called PPIK for intelligence-as-Process, Personality, Interests, and intelligence-as-Knowledge. The framework draws on extant measures of intellectual process (and core cultural knowledge), but also draws from other trait domains, including personality, motivation and interests, self-regulatory processes, and self-concept as important determinants of adult intellectual development. The current proposal represents an important expansion of previous research in four areas: (1) Extending the domain knowledge assessment paradigm to an important real-world knowledge domain (specifically, health and wellness knowledge), where evaluation of age, gender and race differences in health and wellness knowledge and their ability, personality, motivation, etc. correlates will be used to help identify at-risk individuals and groups. (2) Identifying age/cohort differences in knowledge, and the trait determinants of knowledge (across 19 different domains, including science/technology, civics, humanities, business, and current-events, and health/wellness knowledge) across a range of 16 to 75 years of age using a cross-sectional paradigm; (3) Examination of the role of ability, personality, interest, and baseline knowledge determinants of individual differences in short-term domain-specific learning; and (4) Examination of ability, personality, interest, and baseline knowledge determinants of individual differences in self-regulated domain-knowledge learning. This research will yield data that are relevant to a reexamination of the nature of adult intellect -- in a way that will provide a better metric to understanding the intellectual capabilities and limitations of adults at various chronological ages. The research will also help identify the predictors of individual differences in knowledge across a variety of different domains, but especially in the area of health and wellness, by focusing on trait complexes (groups of correlated traits) that support or impede acquisition of knowledge within and between domains.

Grant:	5R01AG018234-03
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	ALBERT, STEVEN M PHD
Title:	COGNITIVE AND PHYSICAL BASIS OF DISABLEMENT
Institution:	COLUMBIA UNIVERSITY HEALTH SCIENCES NEW YORK, NY
Project Period:	2001/03/01-2006/02/28

This research will test a causal model of "disablement,"in which impairment (low scores on tests of motor or cognitive performance) and functional limitation (inefficient or unsafe performance of daily tasks) result in disability (recognition of difficulty or need for help in instrumental and basic activities of daily living [IADL/BADL]). We will follow 360 elders recruited from an existing multi-ethnic community-based study, the Washington Heights-Inwood Columbia Aging Project (WHICAP), all of whom will have mild-to-moderate disability and not meet criteria for dementia. They will be assessed 3 times, 18 months apart. Within disability groups (1, 2, or 3 domains based on self-reports), half of the subjects will be cognitively normal and half will have mild cognitive impairment or questionable dementia. We will assess the direct and indirect effects of impairment and functional limitation on disability in groups defined by self-reported disability status and cognitive performance, in different race-ethnic groups (African-American, Hispanic, white), and longitudinally. In addition, we will assess the accuracy of self- and proxy-reports of disability using a clinical diagnosis (established in a clinical consensus conference) as a gold standard, and alternatively through use of latent class models that do not assume a gold standard. An important feature of this research is its use of the assessment of Motor and Process Skills (AMPS) , an occupational assessment tool for rating functional limitation in the activities of daily living. AMPS evaluations yield scores for motor and cognitive/process limitations that interfere with efficient and safe performance of IADL/BADL tasks. OT's will conduct AMPS evaluations in subject homes, along with detailed assessments of physical impairment (as well as measures of home and neighborhood environment). The parent WHICAP study will provide data on cognitive performance and neurologic-medical status. Our major goal is to test a causal (structural equations) model of disablement. We hypothesize that impairment is related to disability directly but also indirectly through observed motor and cognitive/process limitations. We will test whether this indirect effect is stronger for some groups of elders (e.g., mild disabled) than others. This finding would suggest that disability may be reduced through remediation of motor and cognitive/process skills, as well as by efforts to reduce impairment.

Grant:	5R01AG021203-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	ALWIN, DUANE	MA
Title:	Latent Growth Curve Models of Cognitive Aging	
Institution:	PENNSYLVANIA STATE UNIVERSITY-UNIV PARK	UNIVERSITY PARK, PA
Project Period:	2002/09/30-2005/07/31	

DESCRIPTION (provided by applicant): This research applies strategies of latent growth curve (LGC) modeling with a structural equation framework to examine intra-individual change in trajectories of cognitive performance in old age and its correlates, particularly age, education, health, and physical and sensory functioning. The proposed work focuses explicitly on the following objectives: to confirm patterns of decline with age across a broad spectrum of mental abilities using both crosssectional and longitudinal assessments of cognitive performance in nationally representative samples of the older population; to ascertain the extent to which cross-sectional age-differences in cognitive functioning are spuriously due to cohort-related factors, such as level of schooling, or other age-related phenomena, e.g., comorbidity and sensory functioning; to assess the age-related intra-individual trajectories of several measures of cognitive functioning as well as age-linked covariates such as comorbidity, other social and physical functioning, and sensory functioning using longitudinal data over periods of time of up to seven years; to assess the extent to which age-related declines in sensory impairment and health explain the link between aging and cognitive functioning in middle-aged and older adults, net of education and comorbidity; and to assess how patterns of cognitive decline and its covariates differ by sex and race/ethnicity in older adults. We investigate these issues using two innovative nationally-representative panel surveys of middle-aged and older adults: the original HRS (Health and Retirement Study) national panel study of preretirement men and women aged 51-61 assessed in 1992 (n=9,824) and reinterviewed in 1994, 1996, 1998 and 2000, and the parallel AHEAD (Study of Asset and Health Dynamics Among the Oldest Old) national panel study which interviewed adults aged 70 and above in 1993 (n=7,443) and reinterviewed in 1995, 1998 and 2000. The key elements of our design allow us to: (1) generalize to a national population of middle-aged and older individuals sampled using probability methods; (2) assess differences between birth cohorts in the processes studied; (3) assess occasion-based age changes in the population to estimate the nature and shape of intra-individual change; (4) assess inter-individual and inter-cohort differences in intra-individual change; (5) build synthetic cohort models of accelerated age-based change using the multiple cohort feature of the panel design; (6) assess the effects of fixed covariates and appropriately lagged timevarying covariates on individual differences in age-related change; and (7) assess the extent of bias in these aging functions introduced by problems of sample attrition and/or mortality.

Grant:	5R01AG019803-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	BAHRICK, HARRY P	PHD GEN/EXP PSYCH:LEARNING AND MEMORY
Title:	Cognitive Aging and Access to Knowledge	
Institution:	OHIO WESLEYAN UNIVERSITY	DELAWARE, OH
Project Period:	2002/05/01-2007/04/30	

The objectives are to investigate age-related changes in access to long- standing knowledge and to establish the effect of cognitive aging on the half-life of interventions designed to stabilize access to knowledge. The research will yield normal information about the impact of cognitive aging on accessing available semantic memory content and on the effectiveness of interventions that re-establish access. The findings will differentiate normal from pathological cognitive again impairment. A further purpose is to extend current theories of cognitive aging so as to accommodate age-related changes of memory functioning that are largely independent of processing speed and of processing capacity. Participants in three age groups will be tested for recall and recognition of foreign language vocabulary acquired in school. The difficulty/frequency level of words assigned to the recall and recognition tests will be equated. The data will be subjected to multiple regression analyses. An evaluation of regression will yield predictions of recall access to vocabulary as a function of the age of the individual, the available vocabulary, the level of original knowledge, rehearsals of that knowledge, the retention interval, processing speed, and performance on acquisition of new vocabulary and the interactions among these variables. The half-life of corrective and of preventive maintenance interventions that re-establish or stabilize access to marginal memory targets will be evaluated as a function of the type of target (e.g., nouns, verbs, specific names), the age of the individual, and other individual difference variables and their interactions. The results will yield age-related guidelines regarding effective strategies for stabilizing access to available knowledge, and the results will be related to current theories of cognitive aging.

Grant:	5R01AG017456-04
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	BAYEN, UTE J PHD
Title:	ADULT AGE DIFFERENCES IN RECOGNITION MEMORY
Institution:	UNIVERSITY OF NORTH CAROLINA CHAPEL HILL CHAPEL HILL, NC
Project Period:	2000/02/01-2005/01/31

DESCRIPTION: Normal older adults have, in comparison to young adults, difficulties in memory tasks that require the acquisition and retrieval of new information. This proposal offers an explanation for these difficulties by drawing on a formal theory of recognition memory. It is proposed that older adults are less able than young adults to integrate to-be-remembered information with the context in which it occurs. This theory will be tested in a series of thirteen recognition memory experiments with healthy young and older adults. In a recognition task, participants study a list of items and are later asked which items from a test list appeared on the study list. In the proposed computer-directed experiments, young and older adults will study words in various visual contexts and will be tested in both the same and different contexts. A context effect occurs if memory performance is higher in same-context than different-context test conditions. Predictions regarding context effects are formally derived from a general global matching theory of recognition memory. Different patterns of context effects are expected depending on whether item and context information are processed in an integrative or a non-integrative fashion. The proposed experiments are designed to establish that older adults process contextual information in a non-integrative manner, and have difficulties integrating context with to-be-remembered items. They will further investigate if older adults' difficulties in contextual integration can be accounted for by limitations in general processing resources, and if older adults can overcome their integration deficit with deliberate efforts to integrate information with its context, or by drawing on prior semantic knowledge. A further objective is to investigate if the contextual integration theory can be expanded to a more general information-integration theory that states that older adults have difficulties integrating information in general, whether this concerns the integration of item and context information or inter-item integration of information.

Grant:	1R01AG023399-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	BERKMAN, LISA F	PHD
Title:	Causal Effects of Education on Elder Cognitive Decline	
Institution:	HARVARD UNIVERSITY (SCH OF PUBLIC HLTH)	BOSTON, MA
Project Period:	2003/09/30-2006/08/31	

DESCRIPTION (provided by applicant): We propose to examine the relationship between education and cognitive decline and mortality in old age using longitudinal data from the Health and Retirement Survey (HRS). Although the correlation between education and cognitive decline is well-documented, it is not known if this relationship is causal or due to confounding by individual characteristics such as cognitive ability or family economic status. Furthermore, if we assume this relationship is causal, the key mediators are unknown. We emphasize the importance of innovative analytic approaches in estimating the overall causal effect and in testing specific pathways. Our primary aims are: 1) to derive consistent estimates of the causal effect of education on cognitive change and mortality using instrumental variables analysis; 2) to test whether the effect of education on cognitive outcomes operates through a latency, social trajectory, or cumulative harm model; and 3) to provide unbiased estimates of the importance of three hypothesized pathways linking education and cognitive decline, using new analytic approaches emphasizing the time-varying nature of both mediators and confounders. These hypothesized pathways are: social ties, health behaviors, and cardiovascular health. Rapid changes in state educational policies influenced the educational attainment of birth cohorts in the first half of the 20 th century. Using such natural experiments, instrumental variables analyses can provide estimates of health effects of education, even when important confounders are unmeasured. State policy data on instruments such as compulsory schooling and term length, will be linked to individual level data from the Health and Retirement Survey (HRS). As of the 2002 interview wave, the combined HRS sample included 1 to 5 waves of memory and mental status assessments on over 25,000 participants.We will use innovative methods to test specific pathways while accounting for time-varying covariates. HRS contains detailed information on lifecourse socioeconomic position, including 40 years of Social Security earnings information on over 9,000 original sample members, and physical and behavioral characteristics assessed at up to 6 interview waves. We distinguish between alternative models of how adult socioeconomic trajectories may mediate the effect of education on cognitive decline. Finally, we use gestimation to examine the importance of social ties, health behaviors, and cardiovascular risk in mediating the effect of education on cognitive outcomes.

Grant:	5R01AG019825-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	CARLSON, MICHELLE C	BA
Title:	Cognitive Pathways to Disability	
Institution:	JOHNS HOPKINS UNIVERSITY	BALTIMORE, MD
Project Period:	2002/09/30-2007/08/31	

DESCRIPTION (provided by applicant): Converging lines of evidence suggest that age-related changes in cognition, and particularly, executive function may exert downstream effects on physical function. However, there is a paucity of data regarding the role of these functions in the natural history of physical disability. We propose to address this gap by building on an established ongoing prospective cohort study of initially high-functioning women, aged 70-80 at baseline, the Women's Health and Aging Study II (WHAS II). Thus, our first aim of this ancillary study is to characterize rates of change in various domains of cognitive function over a 9-year interval. Less clear is whether these changes in cognition predict performance-based changes and self-reported transitions to preclinical difficulty independent of the well-studied mobility pathway. Thus, our second aim will be to test the value of a cognitive pathway to preclinical difficulty and disability in three groups of functional outcomes, categorized according to the putative demands they place on mobility, cognition, or both pathways. Our third set of aims will parallel the WHAS II's innovative efforts to assess preclinical functional difficulty in the mobility pathway by developing more valid and sensitive assessment method to better capture functional changes and compensations in complex activities of daily living typically not reported using standard self-report methods. Our fourth aim seeks to translate these epidemiologic findings into clinical terms by exploring how threshold relationships between cognition and physical function correspond to standard clinical indices of cognitive impairment. The WHAS II offers a unique opportunity to explore in-depth causal pathways between cognition and progression to physical disability for numerous reasons. The majority of women have been retained and evaluated over repeated intervals using state-of-the-art self-report measures comprehensive assessments of mobility, basic, and complex physical functions, and, a uniquely enriched cognitive protocol, developed extensively by the principal investigator. We will synthesize research findings from this study toinform the broader aims of the WHAS II renewal study to develop a conceptual framework that prospectively identifies precursors and major pathways in the natural history of disability. Understanding the roles that cognition may play in the transitions to disability will provide opportunities for better identifying at-risk individuals and developing targeted primary and secondary preventive interventions.

Grant:	5R01AG005552-16	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	HESS, THOMAS M	MA PSYCHOLOGY
Title:	Social Cognition and Aging	
Institution:	NORTH CAROLINA STATE UNIVERSITY	RALEIGH, NC
	RALEIGH	
Project Period:	1985/08/01-2007/06/30	

DESCRIPTION (provided by applicant): The proposed research will examine aging-related changes in cognitive functioning, with the goal of understanding how normative changes in basic cognitive skills, goals, and knowledge influence functioning in everyday contexts. It is assumed that the ability to acquire and accurately represent information from social contexts is an important predictor of adaptive functioning. Much information relating to everyday functioning (e.g., medical, financial, consumer) is transmitted through social contexts, including the media (e.g., television, newspapers) and interactions with others (e.g., physicians, financial planners). Thus, it is important to understand the impact that aging might have on reasoning in such contexts. In this research, it is hypothesized that aging-related decrements in the efficiency of basic cognitive functions negatively impact upon older adults'ability to control attention and operate on information in memory. This, in turn, results in reductions in the accuracy of decisions and judgments with aging due to less specificity of information in memory and a concomitant increase in the impact of irrelevant information. It is also hypothesized, however, that older adults adapt to these negative changes in basic cognitive functions by (a) being more selective in their expenditure of limited resources and (b) developing powerful interpretive knowledge structures that permit complex thinking with minimum drain on cognitive resources. These two factors may help explain why many older adults continue to function effectively in everyday life. In this research, adults aged from 20 to 85 wilt be tested in laboratory analogues of everyday situations to examine the impact of these two types of influences on representation and decision-making. Experiments will be conducted in which specific age-related factors are isolated and manipulated in order to gauge their impact on performance. Observed age-related differences will also be examined in relation to ability, health, and other contextual factors in order to better understand potential causal mechanisms. The long-term goat is the development of a model that will describe aging effects on social cognition in order to assist us in understanding the factors that influence older adults'functioning in everyday life. This should also facilitate our ability to structure environments to maximize adaptation to the aging process.

Grant:	5R01AG020153-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	HESS, THOMAS M	MA PSYCHOLOGY
Title:	Stereotype Threat, Aging, and Memory	
Institution:	NORTH CAROLINA STATE UNIVERSITY RALEIGH	RALEIGH, NC
Project Period:	2002/07/01-2005/06/30	

DESCRIPTION (provided by applicant): Many negative stereotypes about older adults exist in our culture. One of the most pervasive relates to the belief that old age is characterized by traits such as incompetence, slowing, and forgetfulness, and that these traits are inevitable aspects of the aging process. Whereas there is considerable scientific evidence that demonstrates declining cognitive skills, there is emerging evidence that suggests a less pessimistic view of aging. For example, the effects of aging on memory are not universal, in that there are certain types of memory skills that exhibit minimal change with aging. Second, there is also emerging evidence that the degree to which age differences in memory are observed is influenced by situational factors that affect older adults'motivations and engagement in the task. Finally, and the focus of the proposed research, research also suggests that our negative stereotypes of aging may negatively affect performance independently of any inevitable effects of aging on performance. The research proposed herein will more thoroughly examine this possibility using the stereotype threat framework. Stereotype threat is thought to occur when members of a stereotyped group (e.g., older adults) are put into a position of potentially confirming the stereotype (e.g., being tested for memory). In such a situation, it is assumed that the individual's anxiety and evaluation apprehension is heightened, which in turn negatively affects their performance. Six separate studies are proposed to examine the situations that might induce stereotype threat in older adults as well as the factors that underlie its influence. Such research is important in terms of helping us to understand (a) the factors associated with age differences in memory performance, (b) the extent to which the validity of aging-related ability assessments might be affected by the operation of stereotype threat, and (c) the potential impact of stereotype threat on the performance of older adults in everyday situations in which they might be stereotyped (e.g., work settings).

Grant:	5R01AG011451-10	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	HOYER, WILLIAM J	MS OTHER AREAS
Title:	AGING OF COGNITIVE MECHANISMS	
Institution:	SYRACUSE UNIVERSITY	SYRACUSE, NY
Project Period:	1993/04/15-2006/06/30	

The proposed experiments build on a program of research aimed at understanding the potentials and limits of effective cognitive functioning during the adult years. Specific aims of the proposed research are 1) to describe cognitive aging in terms of the factors that regulate the rate of skill acquisition, and 2) to describe age differences in the relative efficiency of selected forms of skill learning (item learning, rule learning, feature learning, context learning, and sequence learning). Performance of younger and older adults under conditions that contrast forms of learning (e.g., simple item learning with rule learning) is expected to provide tests of general theories as well as developmental theories of skill acquisition. During the five years of this project, about 1000 women and men between the ages of 20 and 70 years will be tested in eight experiments. Experiments 1-4 examine age-related differences in the effects of practice on item learning, computational speedup, and the shift from computation to item learning under conditions that favor either item learning or computation. Experiments 5-7 are designed to contrast different forms of learning with one other so as to weigh the contribution of each to overall skill. The data from Experiments 5-7 will allow specific age deficits in learning to be identified, and will exploit those deficits to test general theories of learning and automatization. Experiment 8 investigates inter-session disruption and retention effects by age. The outcomes of the proposed research contribute to the understanding of the effective conditions of skill acquisition and retention throughout the adult life span.

Grant:	5R01AG009952-10	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	KEMPER, SUSAN	PHD PSYCHOLOGY, OTHER
Title:	SPEECH ACCOMODATIONS BY AND TO OLDER ADULTS	
Institution:	UNIVERSITY OF KANSAS LAWRENCE	LAWRENCE, KS
Project Period:	1993/12/01-2003/11/30	

In previous research on "Speech Accommodations by and to Older Adults" using a referential communication task, young adults adjusted their fluency, semantic content, and syntactic complexity to the perceived communication needs of their partners. Older adults did not make such speech adjustments and appeared to use a consistent speech style in a variety of situations, suggesting, like other lines of research, that older adults'speech production is constrained by working memory limitations that affect their production of complex syntactic constructions. The present proposal will extend this study of older adults'speech accommodations by using "on-line" experimental tasks manipulated the working memory demands of sentence production tasks. Three series of experiments are proposed. Series 1 will analyze language samples to assess the effects on concurrent processing demands on linguistic fluency, syntactic complexity, and semantic content. A baseline language sample will be compared to language samples collected while participants are concurrently walking, tapping their index fingers, tapping four fingers in a complex pattern, listening to concurrent speech, and listening to auditory babble. These concurrent tasks have previously been shown to affect performance on working memory tasks, hence, they are predicted to compete for working memory and, in turn affect speech production. Walking and tapping rates will also be examined in baseline and concurrent speaking conditions. Series 2 will use a sentence production task that controls the choice of lexical items and examines the latency to generate a sentence using a specified set of lexical items and the complexity of the generated sentence. Three experiments are planned: (2a) To examine sentence initiation times and sentence complexity as a function of the size of the set of specified lexical items. (2b) To examine sentence initiation times and sentence complexity for sentences generated from single verbs or for sentences generated from multiple verbs. (2c) To examine sentence initiation times and sentence complexity for sentences generated to complete simple and complex sentence frames using a specified inventory of lexical items. Series 3 will use a controlled sentence production task that examines the latency to initiate memorized sentences. Three experiments are planned: (3a) To examine sentence initiation times for simple and complex sentences. (3b) To examine intra-sentence pauses during the production of simple and complex sentences. (3c) To examine sentence initiation times for semantically constrained and reversible sentences. In all three series of experiments, individual differences in verbal ability, processing speed, working memory, and inhibition will also be examined.

Grant:	5R01AG018892-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	KEMPER, SUSAN	PHD PSYCHOLOGY, OTHER
Title:	Tracking older adults' eye movement while reading	
Institution:	UNIVERSITY OF KANSAS LAWRENCE	KANSAS CITY, KS
Project Period:	2002/09/30-2006/08/31	

DESCRIPTION (provided by applicant): The proposed investigation employs eye movement technology to study age differences in reading. Increased knowledge about age differences in reading and reading comprehension will be critical for improving older adults'understanding of important and often complex materials such as written medical information and instructions, treatment plans, informed consent forms, insurance forms, and other similar materials. Eye movement technology has proven to be important for studying group and individual differences in reading processes because eye movements are especially sensitive to cognitive factors affecting reading. We propose to use variations on the reading with distraction paradigm (Connelly, Hasher, & Zacks, 1991) to compare young and older adults'pattern of eye movements while reading texts with interposed distracting words and phrases. Although not a typical reading task, this method is useful as a way to test how reading and comprehension are affected by factors influencing the allocation of attention. Older adults typically read texts more slowly than young adults and have poorer comprehension of what they have read. In an effort to explain these differences, we combine the predictions of the inhibitory deficit theory (Hasher & Zacks, 1988), encoding deficit theory (Craik & Byrd, 1985), and Craik's (e.g., 1986) notions of environmental support. Six experiments are proposed to test inhibition and encoding accounts of age differences in reading and reading comprehension. We vary distracter salience, distracter length (number of words), semantic relation of distracter to target passage, distracter meaningfulness, and predictability of distracter location, in both sentence and text passages. Findings from these studies will permit a more complete account of age differences and a refinement of the inhibitory deficit hypothesis, and lead to a greater understanding of the processes underlying age differences in reading.

Grant:	5R01AG018386-02
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	KREMEN, WILLIAM S PHD
Title:	A Longitudinal Twin Study of Cognition and Personality
Institution:	UNIVERSITY OF CALIFORNIA DAVIS DAVIS, CA
Project Period:	2002/03/01-2007/02/28

DESCRIPTION (provided by applicant): We propose to conduct a longitudinal study to investigate ways in which genes and environmental factors contribute to cognitive and adaptive aging, and how the relative influence of genes and environmental factors may change over time. We will study the now middle-aged subjects from the Vietnam Era Twin Registry who we have been studying for the past 12 years. We will study 360 pairs of twins at age 51 years and 360 pairs at age 56, for a total sample of 720 twin pairs (Our colleagues at Boston University are concurrently submitting a grant application that parallels ours. In our application we are requesting funding to collect data from 360 pairs in our lab in Sacramento and in our colleagues'application, they are requesting funding to collect data from the other 360 pairs at their lab in Boston. The two applications comprise an integrated project.) Based on a broad, conceptual model of cognitive and adaptive aging, our Specific Aims are: 1) To characterize normative age-related changes in individual cognitive, health, and personality variables using the classical twin method (univariate approaches); 2) To explicate the bases of patterns of inter-relationships seen within the cognitive domain and between cognitive and non-cognitive variables using bivariate, multivariate, and longitudinal approaches; and 3) To characterize risk factors for change in cognitive and adaptive functioning during mid- and later-life using a co-twin control approach. We propose to address developmental issues by means of: 1) cross-sectional data from the twin cohorts; 2) cognitive and personality data collected previously from this sample; and 3) future longitudinal/cohort sequential data. In contemporary data collection we will include genotyping for APOE, personality traits and characteristics that have implications for later life cognitive functioning and well being (attachment, coping styles, positive and negative emotionality, constraint, resiliency), sensory functioning, and physical functioning. Cognitive assessment will consist of an extensive neuropsychological test battery with particular emphasis on working memory and frontal-executive function, episodic memory, and processing speed. This project will shed light on the dynamic interplay of biological and psychosocial environmental factors that create age-associated changes in health, cognition, and personality. Beginning the project in midlife is particularly advantageous for studying adult aging, enabling us to assess subjects who are in the "prime of life" at baseline, yet relatively close to the time when age-associated changes are likely to become more prominent.

Grant:	3R01AG009203-10S1
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	LABOUVIE-VIEF, GISELA PHD
Title:	COGNITIVE AND EMOTIONAL MATURITY IN ADULTHOOD AND AGING
Institution:	WAYNE STATE UNIVERSITY DETROIT, MI
Project Period:	1991/07/01-2004/06/30

DESCRIPTION (adapted from investigator's abstract): This sequential-longitudinal investigation extends an examination of patterns of cognitive-emotional development across the life span. Research conducted thus far during the initial project period has provided evidence for two psychological components of adult socioemotional development: reflective cognition and maturation of coping. Each is associated with somewhat different predictors/mechanisms: reflective cognition reflects the effects of education and acculturation, while maturity of coping/defense mechanisms reflects a secure relationship history. However the extent to which older individuals performance reflects age or cohort, and the extent to which they reflect flexible affect modulation versus inflexible affect inhibition, remains to be demonstrated. To examine these questions, a longitudinal sample of 330 individuals will be recontracted year 2 of the project. The resulting estimated 300 participants will be distributed over seven age groups from 15 to 93 years, with nearly equal numbers of males and females in each age group. Individuals will respond to cognitive and, socioemotional context and outcome measures. In addition, a subsample (N=150) of the original sample will be selected for an in-depth interview during which measures of physiological reactivity and facial expression of emotion will be interfaced with self-assessments (self-reports) of emotional reactivity. Finally, a new subsample of 154 African-Americans will be matched in age, gender and education to this longitudinal subsample. Analyses will examine the following issues: (a) if age gradients reported so far generalize across time; (b) if changes in reflective cognition and maturity are related to different predictor variables; (c) the degree to which study variables are related to survival; and (d) if the structural models so far established generalizes across time and cultural group; (e) age related differences in affect expression and affect repression/inhibition and (f) if affect repression/inhibition is involved in maintaining a sense of well-being and apparently good coping especially in older individuals.

Grant:	5R01AG017920-04	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	LACHMAN, MARGIE	PHD
Title:	CONTROL BELIEFS, MEMORY, AND AGING	
Institution:	BRANDEIS UNIVERSITY	WALTHAM, MA
Project Period:	2000/04/01-2005/03/31	

DESCRIPTION (adapted from investigator's abstract): A view commonly associated with aging is that memory loss is inevitable and irreversible. Research on memory aging consistently shows there are age-related declines on some aspects of memory, such as episodic memory for words. Nevertheless, not all individuals show decrements, and there is evidence that memory can be improved. Yet, many middle-aged and older adults believe that they have little control over their memory. Two aspects of control, beliefs about memory ability or competence (efficacy) and beliefs about contingency (the relation between effort and performance) will be studied. These beliefs not only show age differences and declines, but they are consistently related to performance outcomes. The aim of this research is to examine the role that memory control beliefs play in contributing to age differences in episodic memory performance and to consider what behavioral and physiological mechanisms link control beliefs and memory performance. Memory for categorizable word lists will be tested in adults between the ages of 21 and 80. It is expected that age differences in episodic memory for words can be reduced by instilling positive views of memory control and by offering opportunities for actual control. It is predicted that promoting a sense of control over memory will result in more effective strategy use, less stress reactivity, and better memory performance, especially for middle-aged and older adults. Stress reactivity and recovery, assessed using salivary cortisol, and strategy use will be tested as mediators of the relationship between control beliefs and memory. To the extent that we can understand the nature of this relationship, it may be possible to develop more effect intervention strategies to enhance memory performance. The results can provide promising directives for reducing memory impairment and improving the everyday functioning of older adults.

Grant:	2R01AG013642-06	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	LI, GUOHUA	MD
Title:	Pilot Aging and Aviation Safety	
Institution:	JOHNS HOPKINS UNIVERSITY	BALTIMORE, MD
Project Period:	1997/09/15-2008/06/30	

DESCRIPTION (provided by applicant): The broad, long-term objectives of this application are to better understand the effects of aging on pilots'safety performance and to improve aviation safety. The specific aims are: (1) to determine age-related variations in the relative risk of crash involvement for commercial aviation pilots; (2) to examine age-related variations in pilot errors in airline and commuter/air taxi crashes; and (3) to disseminate the study results in scientific and public communities and make relevant policy recommendations. Federal Aviation Regulations mandate retirement at age 60 years for all major airline (Part 121) pilots. This policy (usually known as the "age-60 rule") has been the subject of continuing controversy and research since its establishment in 1960. Previous studies examining the effects of aging on piloting performance were conducted primarily under controlled experimental conditions using flight simulators. Few observational studies have examined the association of pilot age with the risk of crash involvement. With funding from the National Institute on Aging, the investigators followed a birth cohort of 3,306 commuter/air taxi (Part 135) pilots from 1987 to 1997 and found that crash risk remained fairly stable as the pilots aged from their late 40s to late 50s. There were insufficient data from the longitudinal study to assess the crash risk beyond age 60. In the proposed project, the investigators will use the case-control design and surveillance data to assess age-related variations in the relative risk of crash involvement for both Part 121 and Part 135 pilots. Cases are pilots who were involved in major airline crashes (Part 121 cases, n=550) or in commuter/air taxi crashes (Part 135 cases, n=2,700) during 1983 through 2005, identified from the National Transportation Safety Board's aviation crash data system. Controls (1,100 Part 121 pilots and 2,700 Part 135 pilots) will be matched with cases on important confounding variables and selected at random from the Federal Aviation Administration's incident data system. Quantitative and textual data for each of the 550 major airline crashes and 2,700 commuter air taxi crashes will be analyzed in depth to delineate age-related differences in pilot error and other contributing factors. Results of this project can provide valuable empirical data for understanding the relationship between pilot aging and safety performance and for reassessing the "age-60 rule."

Grant:	5R01AG018384-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	LYONS, MICHAEL JOSEPH	BA
Title:	A Longitudinal Twin Study of Cognition and Aging	
Institution:	BOSTON UNIVERSITY CHARLES RIVER CAMPUS	BOSTON, MA
Project Period:	2002/03/01-2007/02/28	

DESCRIPTION (provided by applicant): We propose to conduct a longitudinal study to investigate ways in which genes and environmental factors contribute to cognitive and adaptive aging, and how the relative influence of genes and environmental factors may change over time. We will study the now middle-aged subjects from the Vietnam Era Twin Registry who we have been studying for the past 12 years. We will study 360 pairs of twins at age 51 years and 360 pairs at age 56, for a total sample of 720 twin pairs (Our colleagues at the U. C. -Davis are concurrently submitting a grant application that parallels ours. In our application we are requesting funding to collect data from 360 pairs in our lab in Boston and in our colleagues'application, they are requesting funding to collect data from the other 360 pairs at their lab in Sacramento. The two applications comprise an integrated project.) Based on a broad, conceptual model of cognitive and adaptive aging, our Specific Aims are: 1) To characterize normative age-related changes in individual cognitive, health, and personality variables using the classical twin method (univariate approaches); 2) To explicate the bases of patterns of inter-relationships seen within the cognitive domain and between cognitive and non-cognitive variables using bivariate, multivariate, and longitudinal approaches; and 3) To characterize risk factors for change in cognitive and adaptive functioning during mid- and later-life using a co-twin control approach. We propose to address developmental issues by means of: 1) cross-sectional data from the twin cohorts; 2) cognitive and personality data collected previously from this sample; and 3) future longitudinal/cohort sequential data In contemporary data collection we will include genotyping for APOE, personality traits and characteristics that have implications for later life cognitive functioning and well-being (attachment, coping styles, positive and negative emotionality, constraint, resiliency), sensory functioning, and physical functioning. Cognitive assessment will consist of an extensive neuropsychological test battery with particular emphasis on working memory and frontal-executive function, episodic memory, and processing speed. This project will shed light on the dynamic interplay of biological and psychosocial environmental factors that create age-associated changes in health, cognition, and personality. Beginning the project in midlife is particularly advantageous for studying adult aging, enabling us to assess subjects who are in the "prime of life" at baseline, yet relatively close to the time when age-associated changes are likely to become more prominent.

Grant:	5R01AG015384-03
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	MC DOUGALL, GRAHAM J PHD
Title:	IMPROVING EVERYDAY MEMORY IN AT RISK ELDERLY
Institution:	UNIVERSITY OF TEXAS AUSTIN AUSTIN, TX
Project Period:	2001/03/01-2006/02/28

Older adults want to live independently in the community for as long as possible. Factors which place older adults at a high risk for institutionalization include loss of memory performance, and the need for assistance with instrumental activities of daily living. Education and cognitively demanding environments are considered important means of remaining mentally fit. Older adults are capable of improving their memory but whether a psychosocial intervention may assist them to improve or maintain their instrumental activities of daily living is not known. The aims of the study are to determine (1) the effects of the Cognitive Behavioral Model of Everyday Memory (CBMEM)-based memory training intervention with booster sessions on memory self-efficacy, metamemory, anxiety, depression, memory performance, and instrumental activities of daily living; (2) whether the CBMEM based memory intervention will affect the distal functional outcome through its effect on the mediator variables (anxiety, depression, memory self-efficacy and metamemory) and the proximal outcome of memory performance; and (3) to examine the participants'views of the most and least helpful aspects of the CBMEM intervention. The intervention is an 8-session, 1 1/2 hour classroom course designed to teach older adults the use of strategies to improve everyday memory. Strategically placed booster sessions will be provided to subjects within 3 months following the last class session. Bandura's self-efficacy theory guides this study. A sample of 240 adults, aged 65 and older and living independently in the community will be recruited from Austin Travis County, from high rise apartments and retirement facilities. Individuals scoring <23 on the Mini-Mental Status Exam will be excluded from the study. All participants will complete the MMSE, Rivermead Behavioral Memory Test, the CES-D Depression Scale, Spielberger State-Trait Anxiety Inventory, the Medical Outcome Study-36, the Direct Assessment of Functional Status, and the Metamemory and Memory Self-Efficacy scales. In this randomized clinical trial subjects will be randomly assigned to experimental and comparison groups. Data collections will occur over 27 months on five occasions with face-to-face interviews. Data analysis will include descriptive statistics, correlations, 2X5 MANOVA and hierarchical regressions.

Grant:	5R01AG007137-16
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	MCARDLE, JOHN J PHD
Title:	DYNAMIC GROWTH & CHANGE IN ADULT INTELLECTUAL ABILITIES
Institution:	UNIVERSITY OF VIRGINIA CHARLOTTESVILLE, VA CHARLOTTESVILLE
Project Period:	1987/06/01-2004/06/30

Our previous research on the Wechsler Adult Intelligence Scale has produced: (1) a large-scale data base of WAIS information useful for aging research, (2) some novel structural equation models appropriate for aging research, (3) some results about the complex measurement functions of the WAIS, and (4) some results about the complexity of growth curve functions of intellectual ability. During the past four years of this project we have measured a strategically selected set of adults who had been tested before on a wider battery of ability measures, including (5) three-wave longitudinal retest data on the National Growth and Change Study (NGCS) sample, (6) a seventh-wave of longitudinal data on the smaller Bradway sample, and (7) current measurements of the Berkeley Growth Study participants. We have also (8) developed dynamic models for unraveling patterns of leading and lagging indicators of aging processes. In this competing continuation proposal we will continue to use and develop new statistical methods for the synthesis of research on the measurement of dynamic changes in the growth curves of intellectual abilities. We will concentrate on the use of the existing databanks to provide an evaluation of the structural, kinematic, and dynamic hypotheses of the "theory of fluid and crystallized intelligence", and we collect new data from newly completed neurological and experimental studies. The analyses planned include (1) improved ability measurements based on item response theory and improved factorial structure through convergent operations, (2) a formal evaluation of the growth and declines of abilities through latent growth and bear dynamic models, (3) a formal evaluation of the age-based leading and lagging indicators of multivariate developmental sequences through some new multivariate dynamic structural equation models, (4) the creation of a new archive of experimental and neurological measures to evaluate convergent measurement relationships using confirmatory modeling techniques, and (5) provide new methods for further research on aging. These new results will help synthesize all past research on the WAIS, explicitly define the relationships of the WAIS with currently collected measures, and clarify the growth and decline of intellectual abilities across the adult life-span.

Grant:	3R01AG007137-16S1
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	MCARDLE, JOHN J PHD
Title:	DYNAMIC GROWTH & CHANGE IN ADULT INTELLECTUAL ABILITIES
Institution:	UNIVERSITY OF VIRGINIA CHARLOTTESVILLE, VA CHARLOTTESVILLE
Project Period:	1987/06/01-2004/06/30

Our previous research on the Wechsler Adult Intelligence Scale has produced: (1) a large-scale data base of WAIS information useful for aging research, (2) some novel structural equation models appropriate for aging research, (3) some results about the complex measurement functions of the WAIS, and (4) some results about the complexity of growth curve functions of intellectual ability. During the past four years of this project we have measured a strategically selected set of adults who had been tested before on a wider battery of ability measures, including (5) three-wave longitudinal retest data on the National Growth and Change Study (NGCS) sample, (6) a seventh-wave of longitudinal data on the smaller Bradway sample, and (7) current measurements of the Berkeley Growth Study participants. We have also (8) developed dynamic models for unraveling patterns of leading and lagging indicators of aging processes. In this competing continuation proposal we will continue to use and develop new statistical methods for the synthesis of research on the measurement of dynamic changes in the growth curves of intellectual abilities. We will concentrate on the use of the existing databanks to provide an evaluation of the structural, kinematic, and dynamic hypotheses of the "theory of fluid and crystallized intelligence", and we collect new data from newly completed neurological and experimental studies. The analyses planned include (1) improved ability measurements based on item response theory and improved factorial structure through convergent operations, (2) a formal evaluation of the growth and declines of abilities through latent growth and bear dynamic models, (3) a formal evaluation of the age-based leading and lagging indicators of multivariate developmental sequences through some new multivariate dynamic structural equation models, (4) the creation of a new archive of experimental and neurological measures to evaluate convergent measurement relationships using confirmatory modeling techniques, and (5) provide new methods for further research on aging. These new results will help synthesize all past research on the WAIS, explicitly define the relationships of the WAIS with currently collected measures, and clarify the growth and decline of intellectual abilities across the adult life-span.

Grant:	5R01AG013973-13	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MCEVOY, CATHY L.	PHD PSYCHOLOGY
Title:	Prior Knowledge Effects in Cognitive Aging	
Institution:	UNIVERSITY OF SOUTH FLORIDA	TAMPA, FL
Project Period:	1989/09/22-2006/04/30	

DESCRIPTION (provided by the applicant): The specific aims of this project are to understand changes and stability in memory processes associated with aging and how those changes are influenced by the person's ability to use a lifetime of prior knowledge. This project has been exploring the interface between what is known and what is new, and how this interface can be used to understand cognitive aging. People come to the lab with vast knowledge about their language. What is known, for the purpose of this project, is the lexical network each person has for the words used in the experiments. What is new is the episodic appearance of each word. The words SMELL, BOOK, LADDER, etc. may be presented in a memory experiment and everyone is familiar with and has lexical knowledge for these words. What is new in the experiment is that SMELL, BOOK, LADDER, etc. are the words to be remembered, and not other words. A major focus of the present project is to understand how activating prior knowledge affects recall and how this influence changes as adults age. We study memory using tasks in which we manipulate characteristics of the prior knowledge that is assumed to be activated. Through these manipulations we track the influence of activation on memory, observing both stable influences across younger and older adults and changing influences. We are particularly focused on three major issues: is the activation of prior knowledge as useful in prompting recall for older adults as it is for younger adults; is the utilization of prior knowledge more fragile for older adults when attentional resources are reduced; and are there age differences in inhibiting irrelevant prior knowledge? These issues have important implications for normal age changes in memory and for abnormal changes associated with dementia, particularly Alzheimer's disease. Alzheimer's can be thought of as a pathological change in memory processing that is superimposed upon the normal changes associated with aging. To understand how Alzheimer's affects memory it is essential to understand how the person would perform in the absence of the disease. This project also has implications for understanding how memory is affected by differences in the development of the mental lexicon (for example, with deaf students) or differences in the utilization of prior knowledge (as when a person has depression or substance abuse). Throughout life what is known influences what can be remembered, and understanding this influence is the goal of this project.

Grant:	5R01AG019196-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MILLER, LISA M.S	PHD
Title:	Effects of Age, Knowledge, & Control Beliefs on Reading	
Institution:	BRANDEIS UNIVERSITY	WALTHAM, MA
Project Period:	2002/09/01-2007/07/31	

DESCRIPTION (provided by applicant): Knowledge is an important component of cognitive functioning and its role is becoming increasingly acknowledged in theoretical work on cognition and intelligence. Because knowledge stores increase with age, researchers have questioned whether the benefits of knowledge can outweigh age-related declines typically found in the mechanics of processing. Some data suggest that the acquisition and the use of knowledge require some effort and therefore could benefit from increased levels of perceived control. Yet it remains unclear how knowledge and control beliefs jointly affect cognitive processing and whether there are age differences in these processes. In light of the research indicating that control beliefs are particularly important among older adults, control beliefs may be an important antecedent of knowledge use among older adults. Three encoding processes that have been identified as possible mediators of the relationship between control beliefs and cognitive performance are persistence, strategy use, and task engagement. The proposed research investigates a mediational model in which the relationships among age, control beliefs, knowledge and memory performance are explored and the mediational role of these encoding processes are considered. The long-term goal of this research is to better understand how knowledge and control beliefs can offset age-related declines in cognitive processing.

Grant:	5R01AG019155-03	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MUTTER, SHARON A	BS
Title:	Contingency Learning and Judgment in Older Adults	
Institution:	WESTERN KENTUCKY UNIVERSITY	BOWLING GREEN, KY
Project Period:	2001/09/15-2006/08/31	

The ability to acquire and use knowledge about the relationships or contingencies that exist between events in the environment is the foundation of adaptive behavior, enabling us to predict, explain, and control the events in our lives. Given the importance of this information for behavioral adaptation, even small age-related declines in sensitivity to environmental contingencies could lead to less adjustment in novel situations and to restrictions in everyday activities. The acquisition and use of contingency information involves fundamental learning and memory processes that are known to change with age. This research addresses the question of whether these changes produce specific patterns of impaired and intact performance in older adults'contingency learning and judgment. Three studies are proposed. The first two studies focus on "data-driven" contingency judgments that follow the acquisition of novel event relationships. The experiments in Study 1 investigate whether age-related decline in working memory resources affects older adults'ability to acquire and use novel contingency information and whether reducing demands for working memory at encoding and retrieval improves this ability. The experiments in Study 2 investigate whether age-related changes in explicit learning and memory processes lead older adults to experience greater deficits in the explicit acquisition and recollection of novel contingency information than in the implicit acquisition and use of this information as a basis for improving performance. The experiments in Study 3 focus on "theory-driven" contingency judgments. These experiments examine whether an age-related decline in the ability to inhibit the intrusion of pre-existing beliefs and expectancies leads older adults to assign greater weight to their own potentially obsolete or irrelevant contingency knowledge than to novel environmental contingencies. Together, the experiments in these three studies will provide a comprehensive view of older adults'ability to acquire, retrieve, and use contingency information for judgment and prediction.

Grant:	5R01AG016335-03
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	OTT, BRIAN R MD
Title:	A LONGITUDINAL STUDY OF HAZARDOUS DRIVERS WITH DEMENTIA
Institution:	MEMORIAL HOSPITAL OF RHODE ISLAND PAWTUCKET, RI
Project Period:	2001/09/15-2005/08/31

This protocol describes a longitudinal research project which will examine changes in on-road driving performance and changes in {cognition} among actively driving subjects with Alzheimer's disease. It is well recognized that dementia is a risk factor among the elderly for motor vehicle crashes and fatalities. Degenerative dementias such as Alzheimer's disease, because of their progressive nature, eventually lead to driving incompetence in all cases. A critical question that faces clinicians in everyday practice is when to advise patients with early disease to abstain from driving. Because patients with Alzheimer's disease may still be competent to drive if their dementia is in its earliest and mildest stage, and because driving is an important factor in maintaining autonomy for elders, licenses should not be revoked based on arbitrary decisions about one's memory ability. Annual road testing for driving competence of all elders or even all elders with dementia is neither practical nor economical. Therefore, an effective screening instrument is badly needed. Knowledge about the actual driving impairments that occur in dementia patients that lead to hazardous driving and how they relate to changes in neuropsychological function over time is critical to the development of a valid screening tool. Drivers with early stage Alzheimer's disease will be enrolled in this study and followed every six months over {two to} three years. A recently validated road test protocol will be administered by a professional driving instructor. {Computerized} neuropsychological tests of visual perception, visual attention, and executive function will be administered concurrently. It is predicted that the earliest evidence of driving impairment will be associated with disturbances {in visual perception and attention.} In more advanced stages of dementia, when subjects are most likely to be judged as incompetent drivers, there will be prominent deficits in executive function as well. The longitudinal design of this study will give important insights into the evolution of driving impairment among AD patients and assist in the future development of screening tests to identify hazardous drivers who would be likely to fail a performance based road test.

Grant:	2R01AG010175-10A1
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	PEDERSEN, NANCY L PHD
Title:	Genetic & Environmental Influences-Biobehavioral Aging
Institution:	UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES, CA
Project Period:	1992/09/18-2007/08/31

DESCRIPTION (provided by applicant): The primary purpose of the proposed research is to extend the longitudinal behavioral genetic study of aging known as SATSA (the Swedish Adoption/Twin Study of Aging) with a longitudinal follow-up 16 years after the initial in-person testing of 485 individuals from approximately 350 twin pairs, allowing for up to 5 times of in-person testing per subject. In addition, the study will obtain a fifth wave of self-report data on the 1471 individuals who have ever participated in any form of SATSA assessment and are still living. The point at which any participant shows onset of cognitive impairment or dementia as well as mortality information will be linked to the dataset. Of principal interest are analyses of genetic and environmental contributions to individual differences in long-term change and continuity late in life with respect to measures of cognition and health, including health related behavior. Analyses within domains will focus on the trajectory of change with age, investigation of whether age changes differ by cohort, and identifying the most informative predictors of survival. Analyses between domains will investigate the nature of the relationships between cognitive and health variables, as well as examining the direction of effect and the genetic and environmental contributions to the observed relationships. Specific hypotheses about the nature of these relationships will be tested. With an expanded number of measurement occasions as well as the cohort sequential design of the study, we will have an unprecedented opportunity to evaluate issues concerning patterns of aging, including turning points after which decline accelerates, how patterns of decline are related to mortality (terminal decline), which changes precede others, and what factors appear to precipitate or to protect against decline. The explication of individual differences in aging has basic research implications for increased understanding of the fundamental processes of normal and pathological aging, as well as applied implications for treating disorders, preventing disease, and optimizing quality of life.

Grant:	5R01AG015071-05	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	RIZZO, MATTHEW	PHD
Title:	DRIVING IN OLD AGE, ALZHEIMERS DISEASE AND STROKE	
Institution:	UNIVERSITY OF IOWA	IOWA CITY, IA
Project Period:	1999/06/01-2004/05/31	

DESCRIPTION: Car crashes result in great individual suffering and costs to society. Many fatal crashes are caused by faulty driving, and special concerns have been raised about drivers with Alzheimer's disease (AD) and stroke, the two most common causes of cognitive decline in individuals over 60 years of age (the fastest growing segment of the American population). Even though both of these disorders can impair mental abilities crucial to the driving task, surprisingly few reliable criteria are available for deciding who is likely to drive safely and who is not, and few effective probes exist to measure and classify relevant abilities and impairments. The primary purpose of these proposed studies is to identify valid and pragmatic off-road measures of cognitive and visuospatial abilities that can be used to predict safe and unsafe driving abilities in elderly drivers at risk for impairments. A comprehensive approach to evaluating automobile driving in at-risk drivers is developed, through the study of neuropsychological test performances, State driving records, and driving performance in both driving simulator and an instrumented vehicle. The instrumented vehicle ARGOS was designed to measure critical aspects of driver control on the field, under conditions that cannot be reproduced in a laboratory, and without the bias of a road test graded by a human observer. Predictions on driver fitness in neurologically impaired older drivers also will be independently derived from and significantly enhanced by studies conducted on a driving simulator. High fidelity simulations on the Iowa Driving Simulator, the most advanced facility of its type, allow us to present computer-controlled scenarios that look, sound, and feel like the actual experience of driving over real terrain, yet are more reproducible than an actual road test. By implementing high-fidelity simulated collision avoidance scenarios, we can safely infer crash risk through direct observations of driver behavior in emergency situations that cannot otherwise be evaluated, including "fatal" safety errors in the final moments preceding a crash. We will study 165 community dwelling older adults (ages 60-80) who are legally licensed and still actively driving. This includes 110 drivers with cognitive deficits (N=55 due to AD and N=55 due to stroke), and 55 drivers without neurological disease. By analyzing the driving performance of these drivers in the simulator, on-the-road in ARGOS, through a comprehensive battery of "off-road" cognitive and visuoperceptual tests, and with respect to actual State driving records, we will objectively determine which performance factors best discriminate between safe and unsafe drivers. One of the ultimate goals of this line of research is to develop fair and accurate criteria to predict driving ability in elderly populations at risk for cognitive disability.

Grant: 3R01AG018177-04S1

Program Director: ELIAS, JEFFREY W.

Principal Investigator: ROGERS, WENDY A BA

Title: TASK STRATEGIES, AGING AND SKILL ACQUISITION

Institution: GEORGIA INSTITUTE OF TECHNOLOGY ATLANTA, GA

Project Period: 1999/09/15-2004/08/31

DESCRIPTION (adapted from investigator's abstract): Older adults acquire new skills more slowly and less successfully than young adults. Why? One possibility that has received minimal empirical attention is that older adults'approach to the task (i.e., their strategy) may be different from young adults'. Preliminary research suggests that older adults do adopt different task strategies, such strategy differences do mediate age-related differences in skill acquisition, and the strategy use of older adults can be influenced by the structure of the task. The proposed research is designed to answer the following questions: (1) When do older adults use different strategies in skill acquisition tasks? (2) What are the mechanisms that underlie differential strategy use? (3) Is strategy selection of older adults amenable to change, or is it strictly limited by cognitive and speed abilities? (4) Can training and task structure be designed to enable older adults to use the optimal strategy? (5) How can strategy differences be incorporated into a general theory of age-related differences in skill acquisition? Twelve experiments are proposed to investigate strategy issues for young and older adults for a range of skills including perceptual learning, memory-based associative learning, and more complex skills such as learning to use an automatic teller machine and learning to make logic decisions. The proposed effort consists of three experimental series to systematically pursue the goals of identifying and understanding age-related differences in strategy selection, strategy use, and strategy adjustment. First, the costs and benefits of prior practice will be determined to assess the influence of nonspecific transfer on skill acquisition. Second, practice schedule manipulations will determine how task training should be structured to facilitate use of efficient strategies for learning. Third, the flexibility of strategy selection will be assessed with the goal of identifying the task components that lead to optimal strategy choice. The results of the proposed research will yield basic empirical data for a model of age-related differences in skill acquisition as well as practical information about how and when such age-related differences can be minimized through task design or appropriate training.

Grant:	5R01AG018177-05
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	ROGERS, WENDY A DRPH
Title:	TASK STRATEGIES, AGING AND SKILL ACQUISITION
Institution:	GEORGIA INSTITUTE OF TECHNOLOGY ATLANTA, GA
Project Period:	1999/09/15-2004/08/31

DESCRIPTION (adapted from investigator's abstract): Older adults acquire new skills more slowly and less successfully than young adults. Why? One possibility that has received minimal empirical attention is that older adults'approach to the task (i.e., their strategy) may be different from young adults'. Preliminary research suggests that older adults do adopt different task strategies, such strategy differences do mediate age-related differences in skill acquisition, and the strategy use of older adults can be influenced by the structure of the task. The proposed research is designed to answer the following questions: (1) When do older adults use different strategies in skill acquisition tasks? (2) What are the mechanisms that underlie differential strategy use? (3) Is strategy selection of older adults amenable to change, or is it strictly limited by cognitive and speed abilities? (4) Can training and task structure be designed to enable older adults to use the optimal strategy? (5) How can strategy differences be incorporated into a general theory of age-related differences in skill acquisition? Twelve experiments are proposed to investigate strategy issues for young and older adults for a range of skills including perceptual learning, memory-based associative learning, and more complex skills such as learning to use an automatic teller machine and learning to make logic decisions. The proposed effort consists of three experimental series to systematically pursue the goals of identifying and understanding age-related differences in strategy selection, strategy use, and strategy adjustment. First, the costs and benefits of prior practice will be determined to assess the influence of nonspecific transfer on skill acquisition. Second, practice schedule manipulations will determine how task training should be structured to facilitate use of efficient strategies for learning. Third, the flexibility of strategy selection will be assessed with the goal of identifying the task components that lead to optimal strategy choice. The results of the proposed research will yield basic empirical data for a model of age-related differences in skill acquisition as well as practical information about how and when such age-related differences can be minimized through task design or appropriate training.

Grant:	5R01AG016340-05	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	RUBIN, DAVID C	PHD
Title:	MEMORY, LANGUAGE, CULTURE	
Institution:	DUKE UNIVERSITY	DURHAM, NC
Project Period:	1999/09/01-2004/08/31	

Description (adapted from investigator's abstract): A common anecdotal report of older adults is that they remember events that occurred when they were younger better than more recent events. When this reversal of a normal monotonic retention function is examined carefully, either by asking for life stories or by curing individual autobiographical memories with words, older adults do indeed remember more events from when they were 10 to 30 years old. This "bump" phenomenon is one of the few cognitive effects of aging that is not a decrement in performance. It has many explanations that have resisted being teased apart using standard techniques of cognitive psychology. However, by examining people who migrated at various points in their lives, changing language, culture, and environment, we propose to separate classes of explanations. A central aspect of autobiographical memory is language, yet little work has examined whether memory, or discourse of any kind, is easier to retrieve in the language in which it was encoded. Yet a few studies with young adults, clinical data from psychotherapeutic treatment, and the introspections of older bilinguals indicate that it is. By examining the memories of people who migrated and learned a second language at different times (and those who did not migrate or learned both languages simultaneously, or know only one language), we can examine such questions. Since many older adults are bilinguals who have changed their relative competence in their languages over their lifespans, and even more have made major migrations, this work has practical as well as theoretical interest for the nature of language and memory in adult development. Tasks include a narrative and a word-cued autobiographical memory procedure, and a bilingual language assessment. Participant populations recruited to help separate effects include adult Hispanics who migrated to either Anglo or Hispanic communities in the US, Poles who were granted asylum in Denmark, monolingual non-migrating matched controls, and older monolingual adults who migrated within the US to non-retirement communities, age segregated retirement communities, and long-term care facilities.

Grant:	5R01AG018299-03	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	RUDY, THOMAS E	PHD COUNSELING / PSYCHOLOGY
Title:	Chronic Pain in the 65+: Evaluating Functional Impacts	
Institution:	UNIVERSITY OF PITTSBURGH AT PITTSBURGH	PITTSBURGH, PA
Project Period:	2001/09/15-2005/08/31	

Chronic pain plagues approximately 50 percent of community dwelling older adults, and may cause significant disruption of physical, psychosocial, and cognitive function. Despite the prevalence of this potentially devastating problem, well-controlled studies of chronic pain in older adults that use a comprehensive multidimensional model are lacking. Chronic low back pain (CLBP) is among the most common chronic pain conditions of older adults, affecting approximately 6 million individuals in the United States who are greater than or equal to age 65. CLBP offers a robust model with which to study the comprehensive functional effects of chronic pain in the older adult because of the reliable and valid measures of observed physical capacity, self-reported disability and pathology that have been developed specifically for patients with low back pain. The purpose of this investigation is to broaden our understanding of disability in the older adult with chronic pain. Specifically, we will explore (1) the magnitude of the effect of CLBP on physical, psychosocial, and cognitive functioning in 200 community dwelling older adults greater than or equal to age 65 as compared with 200 pain-free control subjects, (2) the impact of CLBP associated psychosocial and neuropsychological dysfunction on physical function, and (3) whether older adults with chronic pain can be classified using a multiaxial taxonomy that has been demonstrated in younger chronic pain patients. The laboratory-based physical capacities testing protocol is designed to assess body mechanics, endurance and coordination using ergonomically relevant tasks (e.g., lifting, reaching). Other comprehensive multidimensional assessment measures will include those that have particular relevance to older adults, such as pain intensity, clinical measures of physical performance, disability, sleep, mood, self- efficacy, detailed measures of neuropsychological function, and self perceptions of health and well-being. This study represents the first well-controlled, comprehensive examination of the effects of chronic pain on individuals who may be most threatened by the risk of functional decline, that is, community dwelling older adults. Once the effects of chronic pain have been comprehensively described, only then can effective treatment programs be developed to help ameliorate the suffering of these older Americans.

Grant:	5R01AG008055-15	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	SCHAIE, K W	PHD GEN/EXP PSYCH:GEN/EXPER PSYCHOL-UNSPEC
Title:	LONGITUDINAL STUDIES OF ADULT COGNITIVE DEVELOPMENT	
Institution:	PENNSYLVANIA STATE UNIVERSITY-UNIV PARK	UNIVERSITY PARK, PA
Project Period:	1988/12/05-2005/03/31	

The Seattle Longitudinal Study (SLS) has been a major resource for monitoring age and cohort trends in adult cognitive development, providing normative data for assessment instruments used with older adults, exploring the causes of individual differences in aging, and assessing the effects of targeted cognitive interventions within the context of a longitudinal study. It is currently funded through 1998 to study the relation between health histories and maintenance of cognitive functioning, to provide another (1998) followup of the longitudinal panels, a 7-year follow-up of a family study, and 7- and 14-year follow-ups of the cognitive training studies. It also includes the administration of a neuropsychological battery, ApoE testing of 700 subjects over the age of 60, and recruitment of subjects for eventual autopsy. The present continuation proposal has four sub-components: (1) Completion of the 7th wave data collection. Funding is sought for the assessment of a new 7th wave of 840 subjects as well as for the analyses based on the currently funded follow-up data collection in the longitudinal study. (2) Neuro-psychological assessment obtained on older panel members over age 60 will be repeated in 3-year intervals in 2000 (N = 500) and 2003 (N = 400) to obtain measures closer to subjects'death. (3) Health histories of longitudinal panel members will be updated through 1998 to assess changes in behavior-disease relationships over time. (4). Family Studies. The second generation members will be reassessed to obtain data over a 14-year period (N = 800) and data will be collected on 600 grandchildren of the original panel member to allow studies of multi-generational family similarity in cognition. Blood samples will be obtained for ApoE genotyping and lipid profiles.

Grant:	5R01AG019604-04	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	SCHWARTZ, BRIAN S.	MD
Title:	EXPLAINING DISPARITIES IN COGNITIVE FUNCTION IN SENIORS	
Institution:	JOHNS HOPKINS UNIVERSITY	BALTIMORE, MD
Project Period:	2000/09/30-2005/08/31	

DESCRIPTION (Taken from the Investigator's Abstract) Cognitive function (CF) is central to daily functioning and quality of life. The life course trajectory in CF is known to vary by race/ethnicity and socioeconomic status (SES), and this variation involves a complex causal web. Unpacking this causal web has important political, social, and public health implications, and provides a foundation for prevention and for ensuring social equity. However, we have only a rudimentary understanding of the factors that mediate these disparities in CF. The causal web is complex and involves such diverse and possibly interrelated domains as genetic, social, behavioral, environmental, contextual factors, and individual vascular health. The direct and indirect contributions of these diverse factors must be considered in trying to explain variation by race/ethnicity and SES, moving beyond the traditional but somewhat limiting exploration of "gene-environment interactions" by more broadly defining the underpinnings of these disparities. Ubiquitous potential causes of a decline in CF in older adults include lead exposure, apolipoprotein E (ApoE) genotype, vascular risk factors (i.e., blood pressure), and health-compromising behaviors (e.g., inactivity and smoking). Importantly, a number of genes known to differ by race/ethnicity appear to influence the toxicokinetics or toxicity of lead, including those for the 8-aminolevulinic dehydratase (ALAD), vitamin D receptor (VDR), Na/K ATPase (NKATP), and ApoE genes. Disparities in CF must be examined using next-generation data and methods that allow the modeling of the causal structure of these multiple domains, and to see how and to what extent social, behavioral, and contextual factors are important mediators and moderators along an extended causal pathway. Only by testing this more complete model, will it be possible to fully explicate the complex multilevel associations that pattern everyday life. The goal of this research is to understand the direct and indirect influences of lead absorption, four specific genes, individual social and behavioral factors, contextual factors, and blood pressure in accounting for the associations of race/ethnicity and SES with CF and cognitive decline. The investigators propose a five-year prospective study of 900 urban residents, aged 50 to 70 years, randomly selected from specific geographic areas with variation in race/ethnicity and SES. All study subjects will have three visits at 16-month intervals, with measurement of cognitive function, blood pressure, tibial lead, patellar lead, individual social and behavioral factors, current and past contextual factors, and ALAD, VDR, NKATP, and ApoE genotypes.

Grant: 1R01AG023112-01

Program Director: ELIAS, JEFFREY W.

Principal Investigator: SINGER, ELEANOR PHD

Title: Beliefs about Genes & Environment as Causes of Behavior

Institution: UNIVERSITY OF MICHIGAN AT ANN ARBOR ANN ARBOR, MI

Project Period: 2003/06/01-2005/05/31

DESCRIPTION (provided by applicant): Scientific information about human genetics is accumulating at an accelerating rate, but information about public knowledge, beliefs, and attitudes with respect to these developments is not. And yet such information is crucial for formulating prudent and humane social and ethical policies in these areas. The aim of this proposal is to add to the limited store of knowledge available about public values and attitudes relevant to various aspects of genetic technology. The proposal has two specific aims. The major aim is to investigate experimentally the determinants of people's beliefs about the relative contribution of heredity and environment to differences in such behavioral characteristics as aggression, shyness, and alcoholism. A second aim of the proposal is to investigate trends in knowledge about and attitudes toward genetic testing and genetic technology by replicating questions previously asked in two earlier studies. Given the rapid changes and developments in the field of genetics, and their increasing availability to the public via the mass media, we expect to see changes in attitudes as well. The vehicle for the study will be the 2004 General Social Survey (GSS), a national face-to-face survey of the adult household population of the U.S. The proposed study of beliefs about genetic and environmental influences on behavior will systematically vary (a) the social desirability of the condition or characteristic asked about as well as (b) the race/ethnicity and (c) the gender of the person manifesting the characteristic in order to determine how each of these affects the judgments made. In addition, we will assess the significance for such judgments of the rater's own sociodemographic characteristics (e.g. race, ethnicity, age, education, marital status, and religion), as well as such aspects of the rater's personality as locus of control, optimism-pessimism, and the need for self-esteem. By including four questions about genetic testing among those we add to the survey, we will be able to investigate beliefs about genetic and environmental influences on behavior.

Grant:	2R01AG013935-06
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	STINE-MORROW, ELIZABETH L PHD
Title:	Age Differences in Resource Allocation During Reading
Institution:	UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN CHAMPAIGN, IL
Project Period:	1996/09/01-2008/02/28

DESCRIPTION (provided by applicant): Throughout the life span, reading is a requisite skill for performing work, attending to personal needs, and participating in society on a number of levels from filing tax returns to helping children navigate through an educational system to maintaining correspondence. In addition, reading enables entry into new worlds allowing continued growth of the self. Not only is the current cohort of older adults disproportionately disadvantaged in literacy skills, but also age-graded changes in processing capacity make some aspects of reading more difficult. This proposal is a request for a continuation of our project examining adult age differences in resource allocation during reading and the impact of these differences on subsequent comprehension and memory performance. We build on our earlier work by integrating our resource allocation approach with the literature on (cognitive and affective) self-regulation, so as to consider the implications of age-graded reductions in processing capacity, increased reliance on knowledge, and increased role of social and emotional goals for reading. A theoretical framework is developed in which self regulation in reading is conceptualized as arising from a set of negative feedback loops functioning in the context of goals and knowledge of the individual reader. An adult developmental model is adopted in which aging is assumed to engender decreases in fluid ability (reducing the efficiency of language computations), increases in crystallized knowledge (thereby increasing reliance on preexisting knowledge), and a shift in goals which give relatively more weight to social-emotional goals relative to cognitive ones. Within this cognitive developmental framework, we propose a series of experiments that explore the conditions under which self-regulation in reading is compromised by resource demands and when it may be used in a compensatory fashion. We specifically explore how self-regulation in reading is affected by (1) challenges created by illegible orthography, complex syntax, and informational density (Series I, II, & III), (2) the availability of background knowledge (Series IV), and (3) social and affective goals (Series V).

Grant:	5R01AG014777-04	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	TERI, LINDA	BA
Title:	PROBLEM SOLVING/PHYSICAL INTERVENTIONS AND AGING	
Institution:	UNIVERSITY OF WASHINGTON	SEATTLE, WA
Project Period:	2000/09/30-2005/08/31	

DESCRIPTION (adapted from investigator's abstract): The proportion of individuals in the United States who are living into old age had risen dramatically in the past several decades and is expected to continue its upward climb. With this has come a growing interest in identifying ways to help aging adults maintain their health, functional independence, and overall quality of life. The primary goal of this proposal is to evaluate a randomized controlled clinical trial of an intervention designed to improve emotional well-being, increase health behaviors, and enhance problem-solving skills. This intervention will provide skills training in two determinants of successful aging: problem solving and physical exercise. Two hundred forty-eight community-residing adults over age 75 will be randomly assigned to one of four treatment conditions in a two-by-two factorial design: Problem-solving (PS) only, Exercise (EX) only, PS+EX, and Usual Care Control (UCC). Subjects will be recruited from a cohort of older adults who are members of a community-based HMO on whom extensive data are already available. Primary outcome measures include the Geriatric Depression Scale (for assessing depression and emotional well-being), the SF-36 (for assessing health and function), and the Everyday Problem-Solving Test (for assessing problem-solving skills). Secondary outcome measures will assess depression and emotional well-being, physical health, cost of care, and mortality. Outcome measures will be collected at the time of enrollment into the study (baseline), at 3 months (post-treatment), and four times over the course of the 2-year follow-up. It is hypothesized that the PS and EX conditions will be effective in improving emotional well-being and physical health. PS will be effective in improving problem-solving; and the combination of PS+EX will be more effective than the individual interventions in improving all areas. It is also hypothesized that these effects will be maintained over 2 years, and that subjects in PS, EX, and PS+EX will improve on measures of disability and independence, health utilization and cost.

Grant:	5R01AG008589-10	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	TSANG, PAMELA S	MA
Title:	AGING AND PILOT TIME-SHARING PERFORMANCE	
Institution:	WRIGHT STATE UNIVERSITY	DAYTON, OH
Project Period:	1990/06/01-2004/07/31	

Time-sharing or dividing attention among multiple tasks is an important component of many activities such as piloting. But time-sharing is a complex skill that may be particularly prone to the adverse effects of aging and attentional limits. The proposed research focuses on the effects of aging on pilot time- sharing performance. Pilots are considered to have a level of expertise in time-sharing that would not have developed over the course of a typical laboratory study. Pilot performance therefore provides an opportunity to examine the potential of expertise to compensate for the age effects. A four-factor theoretical framework has been proposed to account for time- sharing performance. In addition to age and expertise in time- sharing, the composition of the time-shared tasks and attentional resources are hypothesized to influence time-sharing interactively. Two aspects of time-sharing performance are studied: (a) time-sharing efficiency or the level of dual task performance attained and (b) resource allocation or the degree to which subjects can flexibly deploy limited attentional resources as task priority or urgency dictates. Earlier research has demonstrated age-related time- sharing decrements for attention- demanding tasks and partial expertise compensation for age effects. The proposed research examines the extent to which age effects are modifiable by experience in a more flight domain- specific time-sharing condition. Further, mechanisms of the age- related declines and expertise compensation are explored. The research has important theoretical and practical implications. A validated theoretical framework can help elucidate the properties of attentional resources and to help predict time-sharing performance. The proposed research also contributes to a scientifically derived database of pilot performance that should have important implications pertinent to the Age 60 rule that prohibits commercial airline pilots age 60 or above to be the pilot-in-command. Other practical implications include the design of age-independent diagnostic tests for time-sharing decrements, and the specification of training or skill maintenance requirements.

Grant:	5R01AG016201-05	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	VERHAEGHEN, PAUL	PHD
Title:	SEQUENTIAL/COORDINATIVE COMPLEXITY IN COGNITIVE AGING	
Institution:	SYRACUSE UNIVERSITY	SYRACUSE, NY
Project Period:	1998/12/01-2003/11/30	

DESCRIPTION (adapted from investigator's abstract): Aging is characterized by declines in a large number of aspects of the cognitive system (e.g. Salthouse, 1991; Kausler, 1994). An important question is whether the number of mechanisms behind these declines is smaller than the number of processes involved. The present application operates within the levels-of-dissociation framework, formulated by Kliegl and associates (e.g. Kliegl, 1996; Verhaeghen, Kliegl, & Mayr, 1997), which states that age-related differences in speed and accuracy are characterized by certain well-defined, discrete transitions between different levels of processing complexity. More specifically, the investigator intends to investigate the distinction between sequential processing (i.e., processing that is carried out in a number of independent processing steps) and coordinative processing (i.e. processing while a need exists for organizing the transfer of information between processing steps, thus forcing the system to store intermediate results in working memory while concurrent processing is going on). Currently, a number of crucial assumptions and implications of the framework have gone uninvestigated. The present application is aimed at remediating this situation. (1) Higher-order regularities in the sequential-coordinative distinction will be investigated. Are the effects truly modular, as Kliegl (1995) has proposed; or should they rather be conceptualized as state transitions? (2) The proposed all-or-none character of the jump from sequential to coordinative processing in late adulthood will be examined. Do substantial increases in working memory load indeed not lead to further dissociations? (3) The coordination assumption will be tested. Is coordination - stacking information into working memory and retrieving it while concurrent processing is going on - truly the crucial factor, or is a passive working memory load hypothesis sufficient explanation? (4) It will be tested whether the mode of processing changes from sequential to coordinative processing, and whether an age differential exists in such mode shifts. (5) Finally, it will be tested whether an artifact/disuse interpretation of the distinction is feasible, or whether the dissociation persists after a period of extended practice.

Grant:	5R01AG010569-10
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	ZELINSKI, ELIZABETH M. PHD
Title:	LONGITUDINAL ASSESSMENT OF COGNITION IN ADULTS
Institution:	UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES, CA
Project Period:	1993/09/30-2004/08/31

The objectives of the proposed research are to determine whether findings of cross-sectional age differences correspond to longitudinal changes in memory in older adults and to evaluate hypotheses regarding memory deficits in older adults. There is a large literature on age differences in memory demonstrating that older adults have deficits in episodic memory, and considerable effort is devoted to identifying the mechanisms of those deficits. Yet few studies have documented how memory changes in individuals as they age. The significance of the present research program is that it charts longitudinal change in memory, it assesses individual differences in memory change and the sources of those differences, it uses multiple changes of all cognitive constructs and structural equation models to analyze the data, and it includes experiments to test new models of cognitive change, which may then be incorporated into the study for future evaluation of longitudinal slopes. The study uses multi-sample sequential designs that collect data from adults in ranging in age from 30-97 and follows them longitudinally at 3-year intervals. Longitudinal changes are compared with changes estimates from cross-sectional samples collected as part of the project to evaluate the effects of age changes and cohort differences. This makes it possible to evaluate the external validity of cross sectional designs, which re the rule in memory. The role of individual differences in longitudinal memory performance is investigated through analyses of changes in memory predictors including psychometric abilities related to fluid and crystallized intelligence, working memory perceptual speed, and retrieval, as well as demographic characteristics including gender, education, health, and affective status. These data will test the hypothesis that predictors of memory change vary with the requirements of the memory tasks using latent change modeling. For example, it is expected that cognitive slowing and retrieval will best predict problems in retrieving unrelated words from a list, whereas working memory deficits will best predict problems in discourse memory. The results of this research will not only provide answers to important methodological questions regarding the parameters of age changes in memory, but also address a number of issues related to individual differences in intra-individual change with age in cognition, and suggest possible mechanisms of age change in memory in healthy older adults.

Grant:	1R03AG022635-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	ADAMS-PRICE, CAROLYN E	PHD
Title:	PILOT STUDY ON BREAST CANCER, CHEMOTHERAPY, AGE AND UFOV	
Institution:	MISSISSIPPI STATE UNIVERSITY	MISSISSIPPI STATE, MS
Project Period:	2003/07/01-2004/06/30	

This RO3 application addresses the NIA (PAR-02-049) objective, "Cancer in the Elderly" (#7) and is relevant to "Basic research in Behavioral Medicine" (#8), "Cognition in Context" (#12), and "Improved Measures and Methods" (#24). The incidence of breast cancer rises dramatically for post-menopausal women and increases with age. Exposure adjusted crash risk rises with age, and scores on cognitive indicators that are highly associated with important daily activities, such as driving, also tend to decline with age. Chemotherapy is a standard treatment for breast cancer and has been associated with poorer performance on neuropsychological tests. However, effects of chemotherapy on cognitive test performance that is most closely associated with everyday functioning, such as driving, have not been examined nor have interactions between age and chemotherapy on cognitive functioning. We will conduct an innovative pilot study to explore whether chemotherapy for breast cancer is associated with impaired performance on a cognitive test that is highly related to performance of important activities, including driving. We will use as a measure the UFOV, a test of visual attention/cognitive processing speed, that correlates highly with IADLs, including driving as well as crash risk. Despite its possible relevance, the UFOV has not been used in chemotherapy studies. This study will focus on three age groups--< 50, 51-69, and 70 and above and will explore age by chemotherapy interactions. The sample will include 35-50 breast cancer survivors who have completed chemotherapy, and 35-50 age-, race-, and education-matched controls. Participants will also be tested on other cognitive tests to compare findings of this study to previous studies. Data on driving behavior, subjective neuropsychological symptoms, depression and positive protective factors will be collected to explore relationships between actual deficits, perceived deficits, protective factors, and driving behavior. Findings of chemotherapy-associated deficits may be important for the safety and independence of breast cancer survivors and may assist in designing interventions. This study will provide critical information for planning a definitive study of effects of chemotherapy and of age/chemotherapy interactions on cognitive functions.

Grant: 1R03AG023271-01

Program Director: ELIAS, JEFFREY W.

Principal Investigator: ARTISTICO, DANIELE PHD

Title: Aging, Context,Everyday Problem Solving, & Self-efficacy

Institution: UNIVERSITY OF ILLINOIS AT CHICAGO CHICAGO, IL

Project Period: 2003/09/30-2005/08/31

The proposed research is in response to PAR-03-056 and addresses area 15, "Cognition in Context." It explores the impact of contextual factors on adults'beliefs in their capabilities for performance, or self-efficacy beliefs (Bandura, 1997), as well as relations among social context, self-efficacy beliefs, and actual performance on cognitive tasks. The cognitive tasks we propose to study are everyday problem solving items, that is, problems that are ecologically representative of challenges that occur in the natural social contexts of people's day-to-day lives. We draw on previous findings (Artistico, Cervone, & Pezzuti, 2003) indicating that older adults are capable of outperforming younger adults when everyday problems represent domains of high ecological relevance to the older-adult population. The proposed research builds on these past findings while specifically aiming to overcome two gaps in the extant literature. 1) Prior research comparing the performance of younger and older adults in different problem-solving contexts has confounded two independent factors: the context in which an everyday problem is faced and the content of the challenge being faced; this confound makes statements about context, per se, equivocal. We overcome this limitation by proposing experimental stimuli in which the content of a fixed everyday problem is described within varying social contexts that ecologically represent life experiences of younger, middle-age, and older adults. 2) Prior research has been group-centered, with older adults'performance being evaluated on a fixed set of problems that is generically relevant to their age group. This strategy is limited in that it may underestimate the maximal capacities of the idiosyncratic older adult who possesses unique domains of expertise that are not represented in generic item sets. We overcome this limitation through novel idiographic procedures that combine a diary study with laboratory assessments of problem solving. Participants in a single proposed study will attempt both nomothetic (relevant to a given age group) and idiographic (potentially idiosyncratic) problems. This design enables us to test the hypotheses that a) on nomothetic problem sets, there will be an interaction between participant age group and problem type, with older adults attaining their highest level of performance on problems of ecological relevance to their age group, and b) older adults will attain even higher levels of performance on idiographically-identified problems. This study would lay the foundation for a subsequent program of research that would have the aim of enhancing older adults'capacity to cope with everyday problems of living. This could be accomplished by combining the knowledge gained in the present proposed study with self-efficacy theory principles for enhancing beliefs in personal capabilities, including the provision of mastery experiences that may boost self-efficacy perceptions across multiple domains of functioning.

Grant: 1R03AG022683-01

Program Director: ELIAS, JEFFREY W.

Principal Investigator: POTTER, GUY G

Title: JOB COMPLEXITY AND COGNITION IN OLDER TWIN PAIRS

Institution: DUKE UNIVERSITY DURHAM, NC

Project Period: 2003/09/30-2004/08/31

This proposal responds to research topic 12 (Cognition in Context), with secondary relevance to topic 19 (Genetics, Behavior and Aging). The aging of the U.S. population has stimulated public health interest in identifying factors that can preserve the cognitive functioning of older adults. Complex work may be one activity that has a salutary effect on late-life cognitive function, but factors like intelligence, educational level, and early environmental exposures are potential confounds to this association. Twin studies allow for control of many of these confounding factors. The goal of this project is to determine whether occupational complexity is associated with better late-life cognitive functioning in a sample of elderly twins, using data collected by the Duke Twins Study of Memory in Aging on members of the National Research Council-National Academy of Sciences (NAS-NRC) Registry of World War II veteran twins. Specific Aim 1 of this project is to classify each twin's primary lifetime occupation using the Dictionary of Occupational Titles (DOT), from which a measure of complexity can be derived. This allows additional Specific Aims (SA) to be tested using co-twin control analyses: (SA 2) estimate the association between occupational complexity and cognitive status, (SA 3) estimate the association between occupational complexity and change in cognitive status over time, and (SA 4) estimate the extent to which intelligence moderates the relationship between occupational complexity and cognitive status. The study sample, which comprises approximately 1000 monozygotic and 1000 dizygotic twin pairs, has been administered a cognitive status examination every 3-4 years since 1990 as part of a screening and assessment protocol for dementia. Approximately 300 of these pairs also have scores on standard armed services intelligence tests. Logistic regression dependent on twin pair will be used to estimate association between a factor-based measure of occupational complexity from the DOT and either baseline (SA 2) or change scores (SA 3) from the cognitive status measure. Analyses for SA 4 will be similar, using the intelligence test score as a covariate. If occupational complexity is found to enhance late-life cognitive functioning, this modifiable factor could inform cognitive interventions and influence decisions about occupational activities and retirement. Follow-up twin studies can explore whether complex work is a protective factor for dementia.

Grant:	1R03AG022338-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	TENNSTEDT, SHARON L	PHD
Title:	Limited Access Dataset: The ACTIVE Study	
Institution:	NEW ENGLAND RESEARCH INSTITUTES, INC.	WATERTOWN, MA
Project Period:	2003/09/01-2004/08/31	

DESCRIPTION (provided by applicant): The Specific Aim of this R03 is to create Limited Access Datasets for the Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) trial, which was conducted from 1998-2001. ACTIVE was a randomized, controlled, single-blind clinical trial sponsored by the NIA and the NINR. The trial was conducted at 6 field sites (University of Alabama-Birmingham; Hebrew Rehabilitation Center for the Aged, Boston; Indiana University; Johns Hopkins University; Pennsylvania State University; and Wayne State University). The primary objective of ACTIVE was to test the effectiveness and durability of three distinct cognitive interventions in improving elders'performance on basic measures of cognition and on measures of cognitively demanding daily activities (e.g., food preparation, driving, medication use, financial management). The trial employed a four-group design, including three treatment arms (Memory Training, Reasoning Training, or Speed of Processing Training) and a no-contact control group. A total of 2,832 persons were enrolled in the trial. Because of its size and the carefully developed rigor, its datasets offer to investigators a wealth of opportunities for secondary analyses. Modifications will be made to ACTIVE datasets to ensure privacy protection for all ACTIVE participants and institutions. The reformatted datasets will be archived in read-only format on CD-ROM and accompanied by all related measurement instruments, variable descriptions and summary tables, and comprehensive documentation. The Coordinating Center for the ACTIVE trial, the New England Research Institutes, will perform this work.

Grant: 5R37AG005739-18

Program Director: ELIAS, JEFFREY W.

Principal Investigator: BALL, KARLENE K PHD PSYCHOLOGY

Title: IMPROVEMENT OF VISUAL PROCESSING IN OLDER ADULTS

Institution: UNIVERSITY OF ALABAMA AT BIRMINGHAM BIRMINGHAM, AL

Project Period: 1985/08/01-2005/01/31

Many older adults are subject to declines in their ability to function effectively and independently. In particular, sensory, perceptual, and cognitive functions may deteriorate in later life for some individuals, and it is widely believed that these deficits contribute to a decline in the ability to perform everyday activities. While much is now known about cognitive and sensory aging, relatively little is known about the functional consequences of age differences for everyday tasks. Furthermore, relatively little research has been done to aid in the development of interventions designed to prevent, delay, or reverse the disabilities which affect older adults. Past research evaluating the relationships between visual function, attentional function, cognitive function and driving crashes has determined that the Useful Field of View, a composite measure of visual attention, is predictive of the crash frequencies of older drivers, as sell as amenable to intervention. The objectives of this project will extend previous work in three areas; 1) Studies will further explore the mechanisms underlying UFOV reduction, and training. These studies will also permit a test of several current competing theories of cognitive aging, and data will be analyzed to determine whether different mechanisms underlie observed deficits within different individuals. For example, based on existing theoretical models, expansion of the UFOV could be the result of a generalized increase in processing speed, an improved ability to switch attention, or improved inhibitory mechanisms. An individual differences approach will be used to determine why training is effective for different people, the specificity of improvements across sensory modalities, and the relationship of improved attentional function to higher cognitive skills such as working memory. 2) Measuring functional visual abilities in the clinic is becoming increasingly important in geriatric optometry because of the concern for predicting which older patients are at risk for functional problems in everyday activities. Previous work has shown that individuals with identical visual sensitivities can have dramatically different abilities on measures such as the UFOV, which is predictive of driving problems. Studies will further explore the contribution of visual function to higher order visual information processing levels by systematically evaluating the impact of degraded visual input on higher level tasks, such as the UFOV, within individuals of known attentional and cognitive ability. This will allow a determination of the interactions between visual function, attention, and overall mental status on functional performance measures. 3) Further studies will be carried out to explore the relationship between sensory and cognitive processes and functional outcome measures such as driving and accidental injuries. We propose to evaluate specific hypotheses concerning the mechanisms underlying difficulty with specific driving tasks (such as turning left) as well as evaluating transfer of training directly to these specific maneuvers. Such studies, aimed at improving visual/cognitive performance in older adults, should further our understanding of basic visual, attentional, and cognitive processes as well as advance our knowledge of the aging process.

Grant:	5R37AG008235-13	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	DIXON, ROGER A	MA
Title:	Longitudinal Study of Cognitive Aging	
Institution:	UNIVERSITY OF ALBERTA	EDMONTON, AB
Project Period:	1989/08/01-2007/07/31	

DESCRIPTION (provided by applicant): In the Victoria Longitudinal Study (VLS), we conduct a series of cross-sectional and longitudinal studies pertaining to the description and explanation of changes in cognitive performance in late adulthood. The research derives from the perspective that the magnitude and rate of late-life changes in memory performance depend substantially on individual differences in such underlying factors as (a) cognitive ability and resource components, (b) metacognitive and compensatory knowledge and implementation, (c) selected health, biomedical, sensory, neuropsychological, and physiological conditions, and (d) lifestyle, activity, and demographic background indicators. The principal objective is to continue an ongoing large-scale longitudinal investigation, thereby enhancing a unique and increasingly rich data set on human aging.The VLS is designed as a longitudinal sequential study. Three independent samples of 55-85-year old adults are recruited at six-year intervals. Each sample is re-tested at three-year longitudinal intervals. To date, Sample 1 (original n=484; average return rate over 70%) has been tested five times over 12 years (start years 1986, 1989, 1992, 1995, 1999). The sixth wave occurs in 2002. Sample 2 (original n=530; average return rate over 80%) has been tested three times over six years (start years 1993, 1996, 1999). The fourth (late 2002) and fifth waves (2005) occur in this research period. Sample 3 (expected n=530) is presently being tested (current n=300). The second wave begins in 2004. Several comparison samples have been developed in recent years. Approximately 10 hours of data are collected per participant at each occasion. In sum, the proposed research is designed to examine the extent and trajectories of aging-related cognitive and memory changes, as influenced by (a) patterns of differential decline in theoretically derived classes of influencing cognitive components, and (b) conditions representing selected physiological, health, and lifestyle characteristics.

Grant:	5R37AG004306-18	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	HASHER, LYNN A	AB
Title:	Age, Inhibition, and the contents of working memory	
Institution:	UNIVERSITY OF TORONTO	TORONTO, ON
Project Period:	1985/07/01-2007/07/31	

DESCRIPTION (adapted from investigator's abstract): The research explores age similarities and differences in control over thought and action on the assumption that basic attentional mechanisms that control the contents of working memory play a major role in determining high level cognition. The work evaluates a theoretical model (e.g., Hasher, Zacks & May, in press) that proposes that the critical attentional mechanisms involved in inhibiting irrelevant or no longer relevant thoughts and actions are, on average, less efficient in older than younger adults. Two broad issues are at the center of the present series of studies: (1) age related differences in inhibitory and possible similarities in noninhibitory control processes that determine the contents of working memory; (2) the consequences for retrieval of age differences in control over the momentary contents of working memory. Age differences in retrieval are expected to be larger for older adults than for younger adults because of reductions in inhibitory control over the contents of working memory. This will create more "cluttered" bundles of information in memory and the clutter, comprised of relevant target information, along with irrelevant distraction, will either decrease the chances of finding a target in memory or slow access greatly. Several experiments address these predictions and go beyond to establish the existence of organizational devices that can (a) reduce clutter and so (b) diminish the competition at retrieval between relevant and irrelevant information that is otherwise present for those with reduced inhibitory control over the contents of working memory. The use of such organizational devices should help to reduce memory lapses in older adults. Recent work suggests the existence of at least one noninhibitory process that may help to limit clutter in working memory: the semantic context in which individual words occur. It is possible, in contrast to some views of language processing, that meaning activation is quite narrow in natural language situations such as reading. The prediction pursued here is that younger and older adults will not differ in their ability to use this noninhibitory route to narrow meaning activation and so to control the contents of working memory. Findings from this line of work will help to establish boundary conditions for the role of inhibitory processes in controlling thought and action and they might help to foster the development of environmental conditions that would enable older adults to maintain high levels of cognitive functioning in their chosen environment.

Grant:	5R37AG013148-08	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	HERTZOG, CHRISTOPHER K	PHD GEN/EXP PSYCH:GEN/EXPER PSYCHOL-UNSPEC
Title:	AGING, METAMEMORY, AND STRATEGY USE DURING LEARNING	
Institution:	GEORGIA INSTITUTE OF TECHNOLOGY	ATLANTA, GA
Project Period:	1995/07/25-2004/06/30	

DESCRIPTION (adapted from investigator's abstract): Four areas of research are proposed that systematically evaluate age-related differences in associative learning within a metacognitive framework. A central assumption of this framework is that people actively participate in learning new material by (1) utilizing their knowledge about cognitively demanding tasks to select rehearsal strategies, (2) monitoring on-going learning and performance, and (3) utilizing such monitoring to regulate control processes that govern learning and performance. Our long-term objectives include discovering how each of these aspects of self-directed learning influences the rate of learning and age differences in learning. The proposed research involves four separate areas of effort. In general, the proposed experiments involve the use of paired-associate learning and recall to study metacognition, strategies, and learning. Area 1 represents a critical step toward implementing knowledge about aging, metacognition, and strategy use gained in the last funding cycle in a new and unique training program for older adults that simultaneously restructures negative beliefs about age and learning, trains relevant strategies for learning, and trains the use of self-testing (a practical method for using monitoring to guide study) during learning. Area 2 builds on work completed or in progress indicating age-related sparing of the ability to monitor the cognitive system. The investigators focus on factors that influence both relative and absolute accuracy of monitoring, and evaluate age differences in spontaneous (uninstructed) strategy use. Area 3 directs attention to the nature of mediational strategies used during associative learning, extending work with new methods for measuring strategy self-reports developed in the last funded cycle to evaluate age differences in spontaneous (uninstructed) strategy use. Area 4 evaluates the utilization of monitoring to guide self-paced study of paired-associates, in part through the creation of new metacognitive judgements that should help to explain age differences already identified in the utilization of monitoring. Outcomes obtained from all four areas have important theoretical implications for age differences in associative learning and will also provide valuable information on how to construct training and interventions programs to help older adults optimize learning in everyday situations.

Grant:	5R37AG004517-20	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	WINGFIELD, ARTHUR	PHD
Title:	Age and Decision Strategies in Running Memory for Speech	
Institution:	BRANDEIS UNIVERSITY	WALTHAM, MA
Project Period:	1984/04/01-2007/03/31	

DESCRIPTION: Ordinary conversational speech arrives very rapidly, typically averaging between 140 to 180 words per minute. From this acoustically complex and often poorly articulated speech stream the listener must rapidly segment the signal into words, extract the linguistic structure and semantic content, and then internally organize this information for comprehension and later recall. The objective of this proposal is to study rapid speech processing and memory in elderly adults. At the theoretical level, the investigators wish to understand how spoken language comprehension and memory operate within known age-related changes in auditory processing efficiency and transient memory capacity. The program has three interleaved components. The first will be to use the technique of self-paced listening to investigate elderly adults' spontaneous resource allocation strategies while listening to speech. This component will include the use of speech rate manipulations to further study the interaction between speech content, and age-related changes in processing speed, on speech comprehension and memory. The second component will examine the ways in which young and elderly adults use the intonation and stress patterns of natural speech to facilitate the structural analysis and comprehension of the speech input. The final component will use a technique of whole-word gating to explore the nature of the boundary conditions that operate on the effective use of linguistic context in word recognition in meaningful speech. Underlying this research is a question of major theoretical importance, and practical significance. This question is the degree to which time-allocation strategies, and the use of linguistic context in speech processing, represent flexibly deployable operations or whether they represent fixed modes of functioning in the aging cognitive system.

Grant:	5R37AG012713-08	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	YESAVAGE, JEROME A	BA
Title:	Age-Related Longitudinal Changes in Aviator Performance	
Institution:	STANFORD UNIVERSITY	STANFORD, CA
Project Period:	1995/09/10-2006/06/30	

DESCRIPTION (provided by applicant): We will follow a group of over 200 aviators annually for up to 7 years in an accelerated longitudinal study design, and will test the following hypotheses: Hypothesis 1: Overall Effects of Age on Aviation Performance in Pilots Aged 50 to 75. We plan to test the hypothesis that there are significant age-related changes in flight simulator performance among aviators over the age range of 50 to 75 years, and that rate of change is greater for individuals over a critical age than under that age.
Hypothesis 2a: Moderators of Change in Aviation Performance in Pilots Aged 50 to 75. We hypothesize that age-related rate of change in aviation performance in pilots aged 50 to 75 will vary across individuals and will depend on flight experience, cognitive processing speed and a genetic measure, all assessed at baseline (Time 1).
Hypothesis 2b: Mediators of Change in Aviation Performance in Pilots Aged 50 to 75. We hypothesize that rate of change in cognitive processing speed over time may account for some of the individual differences in rate of change in flight simulator performance in pilots aged 50 to 75. In our current work, preliminary analyses indicate that aviators above the age of 54 appeared to be at increased risk for decline in overall performance; although age explained only 20 percent of the variance. We also found, in a preliminary manner, that flight experience, change in cognitive processing speed, and a genetic factor may influence rate of change in these aviators. To better understand in whom and why change occurs we propose: to continue to follow aviators for a longer period so that individual trajectories will be more reliably assessed; and to test our second set of hypotheses in terms of "moderators" and "mediators" of change. In this continuation application, we propose: 1) to continue collection of annual data on a streamlined version of the cognitive measures; 2) to extend the follow-up of our current cohort of 144 aviators from the present maximum of 3 years to as long as 7 years per subject; 3) to collect new annual data on simulator performance involving Instrument Flight Rules (IFR) procedures; 4) to add a new cohort of 100 aviators with the same age-range, emphasizing recruitment of additional pilots in the 50-60 year age range. Our ultimate goal is to predict change in aviator performance better than we can by using age alone.

Grant:	1R43AG021860-01A1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	RAGER, ROBERT	BA
Title:	CD Attention Trainer Improves Older Adults Memory	
Institution:	COMPACT DISC, INC.	SILVER SPRING, MD
Project Period:	2003/09/01-2004/08/31	

DESCRIPTION (provided by applicant): Increasing the ability of older adults to live independently is a growing public health priority. Because age-related memory declines intimate risk of dependency, older adults are concerned about their ability to remember information and events of a few hours ago and acts performed even a few moments ago. We propose an innovative CD-ROM/Web Attention Trainer to improve three basic aspects of attention, i.e., coordinating, allocating, and focusing, relevant to everyday cognitive function of community-residing elderly. Memory theories pose a central role for attention in guiding the initial encoding and later retrieval of to-be-learned information, and deficits in attention, rather than in retrieval, may undermine the elderly's everyday memory functioning. Enhancing basic attention components will help mitigate against many everyday cognitive complaints of the elderly when running multiple errands such as medication regimen compliance and keeping physician appointments which place heavy demands on coordinating, allocating and focusing attention. The proposed intervention holds promise for older adults in bolstering their attentional skills including the encoding of new information into memory and remembering habitual acts. The program, designed to be comfortable, entertaining, and engaging, will equip elderly adults with skills to: maintain and increase attentional skills; to improve perceived efficacy for successfully completing everyday tasks with heavy attention demands; and to monitor the effects of increased attentional function on everyday cognition, memory, and performance. Phase I aims to design, develop and field test a prototype CD-ROM program called ATTENTION TRAINER to help increase and monitor changes in the three basic components of attention, and their effects on cognition and memory more broadly. Phase II will fully develop the Attention Training CD and Web program to meet the everyday cognitive needs of elderly across a spectrum of demographic variables.

Grant:	1R43AG022284-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	SEVERSON, JOAN M	BA
Title:	Virtual Environment Tools for Assessing Fitness to Drive	
Institution:	DIGITAL ARTEFACTS, LLC	IOWA CITY, IA
Project Period:	2003/09/30-2005/01/31	

DESCRIPTION (provided by applicant): Automobile crashes pose a serious public health problem, and drivers with aging and age-related neurological and medical disorders are at increased risk for crashes due to cognitive impairment. Specific effects of cognitive disorders that increase the risk of driver crashes, such as impaired decision-making, can be assessed safely and in detail, under standardized, controlled circumstances in a virtual environment. The long-term objective of this project is to develop low-cost PC-based virtual environment software for assessing fitness-to-drive of cognitively impaired licensed drivers. The investigators draw from multidisciplinary expertise in computer science, neuroergonomics, and public policy. The proposed software product comprises an innovative suite of tools for testing cognitive functions related to the ability to perform driving-related tasks. The graphical component of the software uses a non-photorealistic representation of 3D virtual space and provides rich visual and pictorial motion cues on a standard computer screen without the cost and potential discomfort associated with simulations implemented on large "immersive" displays. Specific candidate scenarios implemented are theory-based and aimed at localizing cognitive errors in the driving task. The work of SBIR Phase I will include research, implementation, and experimentation that will demonstrate feasibility of the long-term objective. Specific Phase I work includes: (1) Create two proof-of-concept software tests: for Go/No-Go decision making, and for susceptibility to distractions ("mudsplashes"); (2) Conduct clinical evaluations of the tests in neurologically normal and cognitively impaired licensed drivers; (3) Determine an appropriate candidate test set for the full suite, to be prototyped, refined, and fully assessed in Phase II. The suite of tools will ultimately address critical aspects of the driving task including navigation, sign/landmark recognition, intersection and rear-end collision avoidance, and multitasking. The suite of tools is expected to be more flexible and cost effective than currently available driving simulator tools and more effective at predicting fitness-to-drive than standard ("paper and pencil") neuropsychological tests. The resulting virtual environment software tools could benefit society by providing accurate, fair, affordable and accessible tools for evaluating drivers with defects in cognitive abilities that are critical to safe automobile driving.

Grant:	1R43AG022260-01	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	STERNS, RONNI S	PHD
Title:	Care Environment English for Non-English Speaking Staff	
Institution:	CREATIVE ACTION, INC.	AKRON, OH
Project Period:	2003/06/15-2004/05/31	

Market potential exists for on-site job training in long-term care (TLC) to help non-English-speaking indirect care dietary, housekeeping, and maintenance staff learn English for the work setting. Creative Action Inc, plans to develop and market the "Care Environment English (CEE) Program for non-English-Speaking Staff" in indirect care positions. Targeted to the LTC industry, the CEE Program will immediately improve the indirect care worker's communication with supervisors, other workers, and residents and will later enable advancement to better-paying positions within the facility. The CEE Program will consist of innovative learning materials with a learning station for self-paced practice, easy-to-use portable materials with phonetic transliteration in Spanish of English words for on-the-spot speaking and a curriculum for weekly training classes in "Care Environment English," and cultural competency. Phase I research and development will create prototypes and test the feasibility of the program curriculum, materials and components for use with Spanish-speaking workers. A counter-balanced control group design will be used. Guided by Phase I results, Phase II research will develop refined prototypes, expand use for other foreign languages, and extend technology to PDA-based language software and DVD multi-media materials. During Phase II, CEE curriculum, materials, and components will be finalized for commercialization in Phase III.

Grant:	2R44AG018675-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	ALLEN, R WADE	MS
Title:	Procedures for Testing Older Driving Capabilities	
Institution:	SYSTEMS TECHNOLOGY, INC.	HAWTHORNE, CA
Project Period:	2000/06/15-2005/08/31	

DESCRIPTION (provided by applicant): The primary objective of this proposed project is to develop a low-cost driving simulator that can be used for screening and potentially retraining the psychomotor, attentional and cognitive skills of older drivers. This development will build on an already existing device that has been used to assess driver behavior impaired by alcohol and fatigue and to train novice drivers. The simulation device is intended to have well developed and sensitive measurement paradigms for assessing psychomotor, attentional and cognitive skills, which have been developed in prior research. The motivation for this development is the growing concern for improving the safety and mobility of older drivers. The basic hardware and software technology for a low cost driving simulation has already been developed and found to be sensitive to driver age. A Phase I feasibility study has shown that efficient test procedures can result in sensitive detection of age impaired driving skills. In this Phase II SBIR project we propose to: 1) further refine the simulator physical format and the driving scenarios and measurement paradigms to asses the psychomotor, attentional and cognitive skills of drivers in critical road and traffic situations; 2) conduct a large study with middle aged and older driver groups to validate the expanded simulation capabilities for screening and training the safety related skills of older drivers.

Grant: 1R44AG022799-01

Program Director: ELIAS, JEFFREY W.

Principal Investigator: KEIRN, PHILIP A BS

Title: Development and Evaluation of a Brief UFOV Measure

Institution: VISUAL AWARENESS, INC. CHICAGO, IL

Project Period: 2003/09/01-2004/02/29

DESCRIPTION (provided by applicant): The ability to identify older drivers at risk for either crash involvement or driving cessation has clear societal and health care benefits. Despite technological advances in automotive safety, older adults who are involved in vehicle crashes are more prone to suffer injury or death, and their recovery from injury is much longer. On the other hand, mobility is critical for maintaining social contacts, independent functioning, health, and a satisfying quality of life. Effective methods for extending safe mobility for older adults through early detection of skills impairments followed by intervention could have far reaching impact as more and more adults achieve advanced ages in coming decades. There is abundant evidence now, from many published and replicated studies, that a measure of complex speed of processing, the UFOV(r) test has adequate sensitivity and specificity to identify high-risk older drivers. However, this test is too cumbersome for screening on a mass basis. The focus of the present application is to evaluate the feasibility of developing a very brief (2-3 minute), self-administered screening version of the UFOV(r) test that could be widely used for early detection of high-risk older drivers.

Grant:	5R44AG014315-03	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MALONE, THOMAS B	MA
Title:	Activities of Daily Living Enhancement Performance Tool	
Institution:	CARLOW INTERNATIONAL INC.	POTOMAC FALLS, VA
Project Period:	1998/09/01-2004/08/31	

DESCRIPTION (provided by applicant): The overall goal of the ADEPT project is to enhance the independence, autonomy, safety, and performance of patients with dementia in conducting activities of daily living (ADL). The overall objective of ADEPT development is to enhance patient care in Special Care Units (SCUs) through the further development and testing of a computerized, self-directed, training toot for Nurse Aides (NAs) which enhances their capacity to provide high quality support to patients in the core ADLs of bathing, dressing, and eating. The underlying philosophy for ADEPT development is to apply the principles and methods of human factors engineering (HFE) to the improvement of care for patients with dementia. The major HFE method to be implemented is task analysis to model patient activities in each ADL, and to identify the requirements associated with successful performance of each task. ADEPT allows caregivers to identify those task performance elements that require assistance and provides recommendations for appropriate intervention strategies. This approach enhances the independence of elders, fostering their ability to maintain/retain functioning to the maximum level at which they are capable or motivated to achieve. Furthermore, the tool provides the health care industry with a method for appropriately training staff to match the capabilities and limitations of the elderly with appropriate care provided by Nurse Aides. The Phase I ADEPT project resulted in the development of a prototype tool that incorporated the dressing ADL. ADEPT-It will build on this by improving the prototype toot, increasing it's usability and interactivity by subjecting the tool to usability testing with prospective users, and extending its application by incorporating the eating and bathing ADLs. ADEPT-Il will also incorporate an assessment module to rate appropriateness of NA assistive intervention choices during training.

Grant:	5R44AG018240-03	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	PRABHU, KRISH	PHD
Title:	DEVICE FOR MEMORY DYSFUNCTION	
Institution:	ARIZONA INSTITUTE FOR BIO-MEDICAL RES	SCOTTSDALE, AZ
Project Period:	2001/06/15-2005/02/28	

Forgetfulness or memory dysfunction occurs more frequently with advancing age, as well as in situations of routine office environments. Routine office tasks like filing are frequently boring tasks, and the forgetfulness problem is exacerbated when an individual with a proclivity to memory dysfunction is working with time constraints and large volumes of materials. We propose to develop a computer based hardware/software solution where it will be possible to tag and locate individual files with precision. PROPOSED COMMERCIAL APPLICATIONS: This research will enable the development of a device that will be capable of precise location of individual files in large buildings. A typical 10-story building may house over a million files.

Grant:	5R44AG016175-03	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	RAGER, ROBERT	BA
Title:	On-Line Web Course Improves Older Persons Memory Skills	
Institution:	COMPACT DISC, INC.	SILVER SPRING, MD
Project Period:	1999/07/01-2004/08/31	

DESCRIPTION (provided by applicant): COMPACT proposes research to utilize the Web to deliver a curriculum of highly accessible courses for improving the personal memory skills of able-minded older adults. Conventional classroom memory training is labor intensive, costly and not practical for elderly adults in rural areas or who have limited mobility. For over four years NIA has supported The ACTIVE (for Advanced Cognitive Training for Independent and Vital Elderly) Study to show that group-based cognitive intervention can help reduce disability, delay nursing home placement and improve quality of life in later adulthood. Alternative modes of cognitive intervention for the elderly are needed and can be as effective as in vivo group-based interventions like ACTIVE. The Web is a new mode of distance learning for older adults that promotes social interchange, via E-mail and online Chat, an important concomitant of late life learning and a deterrent to loneliness among the elderly. This study examines the effectiveness of individualized Web memory training via MemoryUniversity.com. As in ACTIVE, we will assess the effect of our cognitive intervention on "proximal" outcome measures directly related to memory performance in everyday life and "distal" measures more strongly associated with hospitalization and need for formal care. Phase II aims: 1) produce Web courses offering a curriculum focused on memory improvement, including background information, strategy training assessment, and practice components; 2) assess the acceptability and functionality of the Web site among older adults; 3) test the efficacy of the courses in changing older adults'knowledge, attitudes, and intended behaviors toward memory enhancement specifically, and quality of life more generally. PROPOSED COMMERCIAL APPLICATION: The On-Line Memory University memory skill training courses is for individuals via the Practical Memory Institute (PMI), and PMI mini-sites at membership organization web sites e.g., Novarti's HealthAndAge.com, AARP.org, SeniorNET.org, ThirdAge.com etc.; 2) to corporate and governmental organizations via license to Global Learning Systems, Inc.; 3) to online seniors at assisted living facilities (e.g., LinkAges.org & Sunrise Assisted Living); 4) to Professional memory trainers via APA's Div 20; and 5) rehabilitation professionals at the VA, Society of Cognitive Rehabilitation, American Speech Language Hearing Assn.

Grant:	5T32AG000274-04	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	BALL, KARLENE K	PHD
Title:	CLINICAL AND BEHAVIORAL TRAINING IN GERONTOLOGY	
Institution:	UNIVERSITY OF ALABAMA AT BIRMINGHAM	BIRMINGHAM, AL
Project Period:	2000/06/01-2005/04/30	

DESCRIPTION: (From application). The purpose of this program is to provide multidisciplinary research training within separate scientific specialties in aging: psychology, sociology, ophthalmology, nursing, geriatric medicine, neurology, and preventive medicine. The training program will incorporate both pre- and postdoctoral traineeships. The goals of the program are to: develop the expertise of all trainees in aging research, emphasizing the content area, methods, and theory of a particular scientific discipline; provide opportunities for trainees to work on multidisciplinary teams so that they become familiar with other scientific disciplines pertinent to the study of age-related phenomena; and work toward the development of independent research careers through a mentorship of each trainee by a senior investigator, and requiring each trainee to present and publish their research findings, in collaboration with his/her preceptor. Predoctoral trainees will be required to complete the academic requirements of their respective departments as well as those of the training program, and will develop research competence through working on projects within their preceptor's research area. Postdoctoral trainees will begin by working on projects within their preceptor's research area, but will be expected to move toward more independent research and publications. Multidisciplinary aspects of the training program will include participation in the weekly seminar series sponsored by the Center for Aging, required and elective course offerings on aging from multiple departments, opportunities to work on multidisciplinary research teams with their preceptors across the UAB campus, and participation of trainees in professional meetings with a multidisciplinary emphasis.

Grant:	5T32AG020500-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	NESSELROADE, JOHN R	PHD DEVELOP PSYCH:DEVELOPMTL PSYCHOL-UNSPEC
Title:	Training in Quantitative Modeling in Aging	
Institution:	UNIVERSITY OF VIRGINIA CHARLOTTESVILLE	CHARLOTTESVILLE, VA
Project Period:	2002/05/01-2007/04/30	

DESCRIPTION (provided by applicant): The long-term objective of the proposed training program is the strengthening of aging research by training pre- and postdoctoral level students to high levels of expertise in both the substance and methods of studying aging from a social and behavioral science perspective. The resulting benefits include the development of a better understanding of the aging process in relation to health, health practices, adaptation to changing capacities, and social interaction. This objective will be attained by a thorough and comprehensive program of training that includes: (1) formal course work; (2) apprenticeship on ongoing research projects; (3) formal participation in research meetings and colloquia; and (4) participation in specialized, technical workshops and practica aimed at developing quantitative skills. In addition to a substantive focus on aging issues, the training program will emphasize measurement and change representation, research design and implementation, and quantitative modeling and data analysis.

Grant:	2T32AG000175-16	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	SMITH, ANDERSON D	PHD
Title:	RESEARCH TRAINING IN COGNITIVE AGING	
Institution:	GEORGIA INSTITUTE OF TECHNOLOGY	ATLANTA, GA
Project Period:	1988/07/01-2008/04/30	

DESCRIPTION (provided by applicant): The goal of the Georgia Tech research-training program is to provide an excellent academic context for training predoctoral and postdoctoral students for research in Cogntive Aging. Because of the importance of cognitive aging to understanding adult development and aging, a better understanding of the relationship among various cognitive processes and aging is needed. The current program provides research training in this important area. The core faculty at Georgia Tech provides expertise in a diverse set of domains in Cognitive Aging, including memory, language, problem solving, attention, skill learning, human factors, individual differences, metacognition, social cognition, neuropsychology and neuroscience of cognition and aging, and developmental methodology. Trainees are exposed to core courses in cognitive and developmental psychology, specialty courses and seminars in cognitive aging, weekly research seminars, colloquia with visiting scientists, and a strong curriculum in methodology. The program has been funded for fifteen years. During that period twenty-two predoctoral and eleven postdoctoral trainees have been supported. The same level of training support is requested in this renewal application: five predoctoral trainees and two postdoctoral trainees. Since the last competitive application in 1997, the Cognitive Aging program at Georgia Tech has lost two core faculty members, but these faculty have been replaced increasing the breadth of the program. In addition, seven new faculty have become consultant faculty in the training program with ten-consultant faculty in total available to students as mentors.

Grant:	5T32AG000276-04
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	VOGLER, GEORGE P. PHD
Title:	TRAINING IN GENETICS OF COMPLEX BEHAVIORS IN AGING
Institution:	PENNSYLVANIA STATE UNIVERSITY-UNIV PARK UNIVERSITY PARK, PA
Project Period:	2000/06/01-2005/04/30

DESCRIPTION: This application is for a training program in the genetics of complex behaviors of aging requesting four pre- and two post-doctoral positions. The goal of this proposal is to establish a training program to prepare students to be able to apply both reductionist and integrationist approaches to the genetics of age-related complex behaviors, particularly as they relate to quality of life and ability to function. The trainees will receive training in quantitative genetics, molecular genetics, gerontology, and the discipline relevant to the behavior to be studied.

Grant:	5T32AG000204-13	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	WINGFIELD, ARTHUR	PHD
Title:	TRAINING IN COGNITIVE AGING IN A SOCIAL CONTEXT	
Institution:	BRANDEIS UNIVERSITY	WALTHAM, MA
Project Period:	1990/07/01-2006/04/30	

DESCRIPTION (applicant s abstract): Funds are requested for support of three predoctoral and two postdoctoral trainees in Cognitive Aging in a Social Context. The core training faculty consists of eight faculty members in the Psychology Department who will form the nucleus of the Training Program at BU. The goal of the program is to provide strong, integrated training in the areas of cognitive and social psychology of aging, within a life-span developmental perspective at both the pre- and postdoctoral levels, while providing trainees with in-depth coverage and research opportunities in cognitive and social psychology. Predoctoral trainees will be admitted through either of the existing graduate programs in Social and Developmental Psychology or Cognitive Neuroscience. Predoctoral students will be examined by the procedures of the program in which they are enrolled, and their progress within the Training Program will also be reviewed. Training will be carried out in the laboratories housed in the Psychology Department at BU. In addition to expertise of the training faculty, considerable expertise in social and developmental psychology, statistics, research methods and computational systems, neuropsychology and cognitive science is represented by other members of the Psychology Department. The breadth of the program is strengthened by the presence at BU of the Volen National Center for Complex Systems and the Policy Center on Aging at the Heller Graduate School for Advanced Studies in Social Welfare. The program will also draw on the expertise of colleagues within the greater Boston area through established collaborative arrangements, which provide additional training opportunities.

Grant:	5T32AG000048-26	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	ZARIT, STEVEN H	PHD DEVELOP PSYCH:DEVELOPMTL PSYCHOL-OTHER
Title:	INTERDISCIPLINARY TRAINING IN GERONTOLOGY	
Institution:	PENNSYLVANIA STATE UNIVERSITY-UNIV PARK	UNIVERSITY PARK, PA
Project Period:	1977/07/01-2006/04/30	

DESCRIPTION (applicant s abstract): This application requests a five-year continuation of the predoctoral interdisciplinary research training program in Gerontology at PSU. Twelve predoctoral positions are requested for each year of the program. This training program builds on a successful foundation of training and research at PSU. A cornerstone of the program is a distinguished and large research faculty with active programs of funded research who serve as Research Preceptors for trainees. The program combines a balance between breadth and depth which is optimal for predoctoral training. Breadth is provided through three core courses on biological, psychological and sociological issues in aging, an ongoing research colloquium and other experiences. Depth in research training is achieved by completion of discipline-based course work, research methodology and statistics, and, especially, through conducting research under the guidance of Research Preceptors. Preceptors provide hands-on research training, including supervision of trainees'independent doctoral research. A rich training environment provides opportunities to work on an extensive group of funded investigations with appropriate supporting resources in various laboratories and Centers in which faculty are affiliated. Three areas of research are emphasized: (1) biogerontological; (2) social and behavioral; and (3) applied studies of health and long term care. Formal training is provided in responsible conduct of research and conducting studies with minority populations. This training program is coordinated through the PSU Gerontology Center. An interdisciplinary Training Committee is responsible for policies for this program, including review of investigators, monitoring progress of trainees, and coordination of the activities of the Faculty Preceptors. Trainees are selected from the 13 departments and programs which contribute Research Preceptors to this program. Eligibility includes evidence of scholarly and research promise and a commitment to a career in research in aging. The training program has been successful in attracting a large, talented pool of investigators. Recent trainees have a high rate of completion of the program and of their doctorates, and have taken positions which maintain their involvement in research on adult development and aging.

Grant:	2U01AG014289-06A1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	BALL, KARLENE K	PHD
Title:	ACTIVE Phase II: UAB Field Site	
Institution:	UNIVERSITY OF ALABAMA AT BIRMINGHAM	BIRMINGHAM, AL
Project Period:	1996/09/30-2005/12/31	

DESCRIPTION (provided by applicant): This application is a renewal of the application rifled "ACTIVE Phase II: UAB Field Site". This application is for the Field Site at the University of Alabama at Birmingham. Phase I of ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly) was a randomized controlled trial of three cognitive intervention arms, addressing the question of whether improving basic cognition aided in maintaining functional independence in elders. As to be reported in JAMA (11/12/02), Phase I found strong, broad and durable cognitive ability-specific training effects. The effect sizes were comparable to or greater than the amount of cognitive decline observed in other longitudinal studies, suggesting that the interventions have the potential to reverse age-related decline. There was minimal transfer of training effects to everyday activities (i.e., functional competence). However, it should be noted that through the two year followup, there was no evidence of a significant decline in ADL and IADL status. Therefore, to adequately understand the cognitive transfer effects of the training interventions, a longer followup period is required, particularly to see whether there is a separation of the change trajectories for everyday activities of trained and untrained participants over time. Phase II of ACTIVE is proposed as a followup study focused on measuring the long-term impact of training effects on cognitive function and cognitively demanding everyday activities. The Phase II followup will consist of one assessment to include the Phase I post-test battery and a clinical assessment. The ACTIVE cohort (n = 2832) is a special sample, containing substantial oversampling of African American, socioeconomically poor, and very old adults. The Specific Aims of Phase II of ACTIVE are: 1) to determine whether the cognitive interventions (as initial treatment or as a consequence of repeated boosters) have long-term protective effects on functional outcomes; 2) to document any delayed transfer of the cognitive training to secondary outcomes; and 3) to identify individual factors that affect response to intervention. As in Phase I, the primary analytical approach to detecting treatment effects on both cognitive and functional abilities will be a repeated-measures, mixed-effects model incorporating all design features as fixed effects and individual-level variability as random effects. Other multivariate analyses including lagged and cross-lagged analyses of change using latent change analysis, structural equation modeling, and growth curve analyses will also be used as appropriate to characterize relationships between individual difference factors and change in functional competence. Retention is projected conservatively at 72% with 65% of the cohort providing full data and another 7% providing partial data at year 5. Power analysis shows that extending the study will make it possible to observe effect sizes on the order of 0.05-0.10 with excellent power, in the range of at least 80-90%.

Grant:	2U01AG014276-06A1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MARSISKE, MICHAEL	PHD
Title:	ACTIVE Phase II: UF/WSU Field Site	
Institution:	UNIVERSITY OF FLORIDA	GAINESVILLE, FL
Project Period:	1996/09/30-2005/12/31	

DESCRIPTION (provided by applicant): This application is a renewal of the application titled "ACTIVE Phase U: UF/WSU Field Site". This application is for the Field Site at Detroit/Wayne State Univ. Phase I of ACTIVE (Advanced Cognitive Training for _Independent and Vital Elderly) was a randomized controlled trial of three cognitive intervention arms, addressing the question of whether improving basic cognition aided in maintaining functional independence in elders. As to be reported in JAMA (11/12/02), Phase I found strong, broad and durable cognitive ability-specific training effects. The effect sizes were comparable to or greater than the amount of cognitive decline observed in other longitudinal studies, suggesting that the interventions have the potential to reverse age-related decline. There was minimal transfer of training effects to everyday activities (i.e., functional competence). However, it should be noted that through the two-year followup, there was no evidence of a significant decline in ADL and IADL status. Therefore, to adequately understand the cognitive transfer effects of the training interventions, a longer followup period is required, particularly to see whether there is a separation of the change trajectories for everyday activities of trained and untrained participants over time. Phase II of ACTIVE is proposed as a followup study focused on measuring the long-term impact of training effects on cognitive function and cognitively demanding everyday activities. The Phase II followup will consist of one assessment to include the Phase I post-test battery and a clinical assessment. The ACTIVE cohort (n = 2832) is a special sample, containing substantial oversampling of African American, socioeconomically poor, and very old adults. The Specific Aims of Phase II of ACTIVE are: 1) to determine whether the cognitive interventions (as initial treatment or as a consequence of repeated boosters) have long-term protective effects on functional outcomes; 2) to document any delayed transfer of the cognitive training to secondary outcomes," and 3) to identify individual factors that affect response to intervention. As in Phase I, the primary analytical approach to detecting treatment effects on both cognitive and functional abilities will be a repeated-measures, mixed-effects model incorporating all design features as fixed effects and individual-level variability as random effects. Other multivariate analyses including lagged and cross-lagged analyses of change using latent change analysis, structural equation modeling, and growth curve analyses will also be used as appropriate to characterize relationships between individual difference factors and change in functional competence. Retention is projected conservatively at 72% with 65% of the cohort providing full data and another 7% providing partial data at year 5. Power analysis shows that extending the study will make it possible to observe effect sizes on the order of 0.05-0.10 with excellent power, in the range of at least 80-90%.

Grant:	2U01AG014260-06A1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	REBOK, GEORGE	
Title:	ACTIVE Phase II: JHU Field Site	
Institution:	JOHNS HOPKINS UNIVERSITY	BALTIMORE, MD
Project Period:	1996/09/30-2005/12/31	

DESCRIPTION (provided by applicant): This application is a renewal of the application titled "Trial of a Cognitive Intervention for Older Adults." This application is for the Field Site at Johns Hopkins University. Phase I of ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly) was a randomized controlled trial of three cognitive intervention arms, addressing the question of whether improving basic cognition aided in maintaining functional independence in elders. As to be reported in JAMA (11112102), Phase I found strong, broad, and durable cognitive ability-specific training effects. The effect sizes were comparable to or greater than the amount of cognitive decline observed in other longitudinal studies, suggesting that the interventions have the potential to reverse age-related decline. There was minimal transfer of training effects to everyday activities (i.e., functional competence). However, it should be noted that through the two-year followup, there was no evidence of a significant decline in ADL and IADL status. Therefore, to adequately understand the cognitive transfer effects of the training interventions, a longer followup period is required, particularly to see whether there is a separation of the change trajectories for everyday activities of trained and untrained participants over time. Phase II of ACTIVE is proposed as a followup study focused on measuring the long-term impact of training effects on cognitive function and cognitively demanding everyday activities. The Phase II followup will consist of one assessment to include the Phase I post-test battery and a clinical assessment. The ACTIVE cohort (n = 2832) is a special sample, containing substantial oversampling of African American, socioeconomically poor, and very old adults. The Specific Aims of Phase II of ACTIVE are: 1) to determine whether the cognitive interventions (as initial treatment or as a consequence of repeated boosters) have long-term protective effects on functional outcomes; 2) to document any delayed transfer of the cognitive training to secondary outcomes; and 3) to identify individual factors that affect response to intervention. As in Phase I, the primary analytical approach to detecting treatment effects on both cognitive and functional abilities will be a repeated-measures, mixed-effects model incorporating all design features as fixed effects and individual-level variability as random effects. Other multivariate analyses including lagged and cross-lagged analyses of change using latent change analysis, structural equation modeling, and growth curve analyses will also be used as appropriate to characterize relationships between individual difference factors and change in functional competence. Retention is projected conservatively at 72% with 65% of the cohort providing full data and another 7% providing partial data at year 5. Power analysis shows that extending the study will make it possible to observe effect sizes on the order of 0.05-0.10 with excellent power, in the range of at least 80-90%.

Grant:	2U01AG014282-06A1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	TENNSTEDT, SHARON L	PHD
Title:	ACTIVE Phase II: Coordinating Center	
Institution:	NEW ENGLAND RESEARCH INSTITUTES, INC.	WATERTOWN, MA
Project Period:	1996/09/30-2005/12/31	

DESCRIPTION (provided by applicant): This application is a renewal of the application titled "Trial of a Cognitive Intervention for Older Adults-CC". This application is for the Coordinating Center. Phase I of ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly) was a randomized controlled trial of three cognitive intervention arms, addressing the question of whether improving basic cognition aided in maintaining functional independence in elders. As to be reported in JAMA (11/12/02), Phase I found strong, broad and durable cognitive ability-specific training effects. The effect sizes were comparable to or greater than the amount of cognitive decline observed in other longitudinal studies, suggesting that the interventions have the potential to reverse age-related decline. There was minimal transfer of training effects to everyday activities (i.e., functional competence). However, it should be noted that through the two-year followup, there was no evidence of a significant decline in ADL and IADL status. Therefore, to adequately understand the cognitive transfer effects of the training interventions requires a longer followup period, particularly to see whether there is a separation of the change trajectories for everyday activities of trained and untrained participants over time. Phase II of ACTIVE is proposed as a followup study focused on measuring the long-term impact of training effects on cognitive function and cognitively demanding everyday activities. The Phase II followup will consist of one assessment to include the Phase I post-test battery and a clinical assessment. The ACTIVE cohort (n = 2832) is a special sample, containing substantial oversampling of African American, socioeconomically poor, and very old adults. The Specific Aims of Phase II of ACTIVE are: 1) to determine whether the cognitive interventions (as initlal treatment or as a consequence of repeated boosters) have long-term protective effects on functional outcomes; 2) to document any delayed transfer of the cognitive training to secondary outcomes; and 3) to identify individual factors that affect response to intervention. As in Phase I, the primary analytical approach to detecting treatment effects on both cognitive and functional abilities will be a repeated-measures, mixed-effects model incorporating all design features as fixed effects and individual-level variability as random effects. Other multivariate analyses including lagged and cross-lagged analyses of change using latent change analysis, structural equation modeling, and growth curve analyses will also be used as appropriate to characterize relationships between individual difference factors and change in functional competence. Retention is projected conservatively at 72% with 65% of the cohort providing full data and another 7% providing partial data at year 5. Power analysis shows that extending the study will make it possible to observe effect sizes on the order of 0.05-0.10 with excellent power, in the range of at least 80-90%.

Grant:	2U01AG014263-06A1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	WILLIS, SHERRY L	PHD
Title:	ACTIVE Phase II: PSU Field Site	
Institution:	PENNSYLVANIA STATE UNIVERSITY-UNIV PARK	UNIVERSITY PARK, PA
Project Period:	1997/08/15-2005/12/31	

DESCRIPTION (provided by applicant): This application is a renewal of the application titled ACTIVE Phase II: PSU Field Site. This application is for the Field Site at The Pennsylvania State University. Phase I of ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly) was a randomized controlled trial of three cognitive intervention arms, addressing the question of whether improving basic cognition aided in maintaining functional independence in elders. Phase One found strong, broad and durable cognitive ability-specific training effects but minimal transfer to everyday activities (i.e., functional competence). Through the two-year followup, there was no evidence of a significant decline in ADL and IADL status. To adequately understand the cognitive transfer effects of the training interventions requires a longer followup period, particularly to see whether there is a separation of the change trajectories for everyday activities of trained and untrained participants over time. Phase II of ACTIVE is proposed as a followup study focused on measuring the longterm impact of training effects on cognitive function and cognitively demanding everyday activities. The Phase II followup will consist of one assessment to include the Phase I post-test battery and a clinical assessment. The ACTIVE cohort (n = 2832) is a special sample, containing substantial oversampling of African American, socioeconomically poor, and very old adults. The Specific Aims of Phase II of ACTIVE are: 1) to determine whether the cognitive interventions (as initial treatment or as a consequence of repeated boosters) have long-term protective effects on functional outcomes; 2) to document any delayed transfer of the cognitive training to secondary outcomes; and 3) to identify individual factors that affect response to intervention. As in Phase I, the primary analytical approach to detecting treatment effects on both cognitive and functional abilities will be a repeated-measures, mixed-effects model incorporating all design features as fixed effects and individual-level variability as random effects. Other multivariate analyses including lagged and cross-lagged analyses of change using latent change analysis, structuralmodeling, and growth curve analyses will also be used as appropriate to characterize relationships between individual difference factors and change in functional competence. Retention is projected conservatively at 72% with 65% of the cohort providing full data and another 7% providing partial data at year 5. Power analysis shows that extending the study will make it possible to observe effect sizes on the order of 0.05-0.10 with excellent power, in the range of at least 80-90%.

Grant:	5U13AG014120-06
Program Director:	ELIAS, JEFFREY W.
Principal Investigator:	MEHROTRA, CHANDRA M PHD
Title:	BUILDING A COMMUNITY OF SCHOLARS IN PSYCHOLOGY OF AGING
Institution:	COLLEGE OF ST. SCHOLASTICA DULUTH, MN
Project Period:	1998/02/15-2003/11/30

The program has been designed to further increase the national capacity for conducting high quality .aging research, thereby enhancing the health status of older adults. Thirty psychology faculty will receive advanced training in research methodology in order to build a community of college teachers committed to developing an active research agenda and to integrating teaching and research in aging. Specific objectives include: 1) increasing psychology faculty's knowledge, skills, and motivation for pursuing an ongoing program of aging research, 2) providing participants an opportunity to interact intensively with senior investigators and to promote the development of networking relationships among them, 3) increasing participants'awareness of grant support available for exploring new directions in aging research and providing them extended opportunities to interact with NIA program staff, 4) increasing the number of strong research proposals that participants submit to the National Institute on Aging. Program design includes an initial two-week institute, ongoing consultation regarding proposal development, a February working session, and a summer follow-up institute. Topics covered include: Research Design & Analysis (K. Warner Schaie); Issues in Conducting Field Studies (Neil Charness); Evaluation of Interventions (Margaret Gatz); Assessing Older Adults (M. Powell Lawton); Conducting Research with African American Elders (Keith Whitfield); and Seeking Grant Support (NIA Staff). In order to promote dissemination of program content and outcomes, faculty will be invited to contribute to a special theme issue of Educational Gerontology focusing on methodological issues in aging research. The program will be promoted through a collaborative liaison with the American Psychological Association, through a linkage with the Resource Center for Minority Aging Research, through contacts with other professional organizations, and through networking activities of past participants and visiting professors.

Grant:	3U13AG014120-06S1	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MEHROTRA, CHANDRA M	PHD
Title:	Building a Community of Scholars in Psychology of Aging	
Institution:	COLLEGE OF ST. SCHOLASTICA	DULUTH, MN
Project Period:	1998/02/15-2004/11/30	

DESCRIPTION (provided by applicant): This application has been designed to address the continuing need to expand the pool of investigators engaged in aging research and to nurture the untapped potential of junior and mid-career psychology faculty from colleges and universities across the country. By further increasing the national capacity for conducting high quality aging research, the proposed program will significantly enhance the health status of older adults. Fifteen psychology faculty will receive advanced training in research methodology in order to build a community of college teachers committed to developing an active research agenda and to integrating teaching and research in aging. Specific objectives include: (1) increasing participants'knowledge, skills, and motivation for pursuing an ongoing program of aging research; (2) providing participants an opportunity to interact intensively with each other, senior investigators, and members of previous cohorts and to promote the development of networking relationships among them; (3) increasing participants'awareness of grant support available for exploring new directions in aging research and providing them extended opportunities to interact with NIA program staff; and (4) increasing the number of strong research proposals that are submitted to the National Institute on Aging. The program will be promoted through a collaborative liaison with the American Psychological Association. Program design includes an initial two-week institute, ongoing consultation during the academic year, a mid-year meeting, and a summer follow-up institute. Topics include: Research Design & Analysis (K. Warner Schaie); Conducting Research with African American Elders (Keith Whitfield); Field Studies (Neil Charness); Cognitive Aging (Timothy Salthouse); Social Psychological Aging (Fredda Blanchard-Fields); Conducting Research in Teaching-Oriented Institutions (Chandra Mehrotra); Publication and Dissemination (Margaret Gatz); and Seeking Grant Support (Charness, Mehrotra, and NIA staff). A systematic evaluation will be conducted to determine the effectiveness of the program in achieving the intended outcomes. In order to promote dissemination of program content, faculty will be invited to contribute to a special theme issue of Educational Gerontology focusing on methodological issues in aging research. The PI and the participants will also disseminate their NIA-supported activities via conference presentations, publications, and Web sites.

Grant:	5U13AG019236-02	
Program Director:	ELIAS, JEFFREY W.	
Principal Investigator:	MEHROTRA, CHANDRA M	PHD
Title:	Promoting Social Psychological Aging Research	
Institution:	COLLEGE OF ST. SCHOLASTICA	DULUTH, MN
Project Period:	2002/02/01-2005/01/31	

DESCRIPTION (provided by applicant): The proposed program is designed to increase the national capacity for conducting high quality research in social psychological aging, thereby enhancing the health status of older adults. Twelve senior faculty will receive advanced training with the goal of enhancing their ability to develop an active research agenda and integrating teaching and research on aging in their curricula. Program objectives include: (1) to increase participants knowledge, skills, and motivation for developing and/or expanding a program of research in social psychological aging; (2) to engage social psychology faculty in developing aging research projects in collaboration with each other and with distinguished scholars in aging; and (3) to increase participants awareness of grant support available for exploring new directions in aging research and to provide them with extended opportunities to interact with NIA staff. Program design includes an initial workshop in August 2002, ongoing consultation regarding application development during the intervening year, and an August 2003 follow-up meeting. Topics include: Conceptual Interface between Research in Social Psychology and Aging; Methodological Issues; Multi-Level Integrative Analysis of Human Behavior; Conducting Research in Social Psychology and Aging; and Seeking Grant Support from NIA. The program will be promoted through a liaison with the American Psychological Association, linkages with leaders in the social psychology community, contacts with Historically Black Colleges and Universities, and announcements in a variety of publications and list-servs. Ongoing evaluation will be conducted to monitor the implementation of proposed activities and to determine their effectiveness in achieving the expected outcomes. This information will be included in presentations that the principal investigator will give at national meetings.